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THE ADDRESS IN MEDICINE.

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MR. PRESIDENT AND GENTLEMEN: The last International Medical Congress, in some respects, was the most important of the series. In the discussion of those great topics included within the domain of state or preventive medicine, matters of high interest for all educated people, of the greatest importance to the well-being of society, and that exhibit in the clearest manner the disinterested benevolence of the medical profession, were fully considered. To an unprejudiced observer it would seem that matters of such high interest would receive respectful attention, and such practical benevolence be gratefully appreciated by the great organs of public opinion—the daily newspapers: it must be admitted that it did not prove to be so.

It is a remarkable fact that the proceedings of the Congress were revealed to the universal public in a manner that is not too strongly characterized by the word *flip-pant*. In explanation of this phenomenon it was said that such is the usual attitude of the press toward the medical profession; that these representatives of current opinion do not take the profession "seriously," but rather view the men, and the work of the Congress, as a comedy performance, to be criticised and laughed over on the same lines. If the great metropolitan dailies stood alone in this attitude, it were the less surprising; but, unfortunately, others participate. No thoughtful observer can have failed to see that such is the disposition of the press throughout the country toward all medical organizations. The same position is assumed by a certain element in American society that delights to be considered "cultured." By these, a physician is a "medico," and the art and science as a profession or business, is no higher esteemed than such shows as Barnum's woolly-horse, or Chang the Chinese giant. Recently at a meeting of a medical jurisprudence society, several members, scientific men, questioned the accuracy of some statements made by the author of a paper who is connected officially with the Coroner's office. For thus presuming to question an official, they were sharply criticised by the Prosecuting Attorney, who happened to be present, and he also chided them in a manner befitting a pedagogue to his naughty boys, rather than members of a scientific body.

The causes of this state of things are not far to seek. Every one here present must be familiar with them. I purpose only to consider those which have to do with the therapeutic art—the most important.

Not a little of the ignorance, the crudities, the vague

theories of the eighteenth century still linger in the nineteenth century near its close. It is yet understood by many that the therapeutic art is based on some *ism* or dogma. "Allopath" and "homœopath" are still bandied about as having vital power, when they were long since relegated to the lumber-room of the past by modern science. We yet hear of "new school" and "old school," as if notions brought out near the close of the last century, compounded of the vagaries of Hahnemann and the mysticism of Mesmer, could still continue guides to practice. The contentions of so-called "schools," the noisy demonstrations of the Thompsonians, and eclectic, and physio-medicals; the rabid water-cure, and the innumerable special cures, have produced in the popular mind a distrust of all systems.

The cry of "new school" has proved the most sympathetic; but the attractive sugar pellets, and tasteless liquids, carry with them their own destruction, for, in the deeper consciousness of men, lies the fatal objection that great results are not to be accomplished by such slender means. Hence, left to its own course, homœopathy has practically died out on the Continent. On this side of the Ocean it still maintains a certain influence, because of social conditions and prejudices that are only possible in free communities.

The success of such wretched puerilities, such inanities as the homœopathic practice consists of, does more to lower the position of the medical profession than any other cause. The false statistics published as actual fact, accepted as true, and passing unchallenged, are at this moment doing an almost incredible amount of mischief. Two years ago a pamphlet was very widely distributed throughout the West, as a trade document, containing much falsehood in the way of statements of pretended scientific truths, and fictitious statistics, that placed legitimate medicine in a false position, and discredited its practice to a most serious extent. This pamphlet was issued by a St. Louis homœopathic pharmacy, and was written by a Dr. Somers, who had been a professor in the faculty of Iowa University, and it had, therefore, an air of authority that materially contributed to its success. The usual tirade against allopathy—its past errors, and its present uncertainties—occupied much of this pamphlet, but its really effective part consisted in statistics made up out of the whole cloth. These statistics, it is asserted, were obtained from official publications, and gave the results in numbers of the comparative success of homœopathy and allopathy, in the cities of Boston, New York, Philadelphia, and others. It was thus shown by pretended official figures, that homœopathic practice is invariably from 30 to 50 per cent. more successful than allopathic.

What answer can be made to such statements, apparently supported by official figures? I am informed by a physician of the best reputation, living in a large city of the West, that this pamphlet was sent to every householder in a considerable town, that legitimate practice

was in a short time completely destroyed, and every regular physician reduced to extremity. We need not be surprised. How could any physician answer those immutable figures? Those who suffer from the effects of such misrepresentations are clear that an adequate answer should be made, although the profession is averse to medical polemics—for, wherever this lying paper has gone, the regular practitioner is silenced. Here are the official figures—what will you do about it? It remains unanswered, and is yet doing its work efficiently as a trade circular.

When this pamphlet was brought to my notice, I communicated with the official authorities to learn about the source and probable value of these pretended official figures. I expected to discover manipulations which made the figures tell the story that suited the purposes of the St. Louis drug house; but I was amazed to hear that no statistics of this kind exist at all, that a return showing the effect of a system of practice on the mortality rates had never been made, and therefore never published, and hence the figures given in the pamphlet were made out and out. I ascertained on further inquiry that though every aid were given, it would be a matter of infinite difficulty to get such figures, and to assure their accuracy would require an amount of time and trouble that hardly any one could give to such a task.

We cannot but regret that such misrepresentations should go unexposed. No other argument was needed to demonstrate the falseness of a system, maintained by frauds of such a shameless character; but meanwhile the advocates of the system profit by the forbearance of the medical profession in the attitude of maintaining its dignity.

The one remedy for existing ills—and to put the medical profession in its proper attitude as a scientific body—is to improve the art. How can the application of remedial agents be rendered more certain?

As a teacher of therapeutics for many years, I could not fail to observe that the attainments of the profession in respect to the powers of medicines are not as fully developed as they ought to be. They do not have that familiarity with the physiological powers of drugs which the effective use of remedies demands. It thus happens that the highest precision is not attained. Vague notions take the place of scientific accuracy when such has been the progress in this department, that a considerable degree of certainty should be the rule.

It must be admitted that the acquisition of therapeutical skill has been greatly hampered by the complexity of the materials. The barnacles of a century have been accumulating on the framework, and the new knowledge has been thrust into the crevices of old notions until all is made to appear confused and uncertain.

The subject should be divested of its superfluities. The list of preparations given in the *U. S. Pharmacopœia*—our only official authority—can be greatly curtailed with advantage. Remedies long in use and of comparatively little value are overloaded with formulae. The preparations of iron given by the *Pharmacopœia* are thirty-eight in number, of mercury twenty-five, of rhubarb fifteen, of aloes as many. One-third of these could perform the duty of all. The botanical and pharmaceutical details are such that to master them would require the whole of the time given to the medical studies. If obtained, such knowledge is of small value to physi-

cians: therefore it should be turned over to the pharmacist, to whom it properly belongs.

It needs no argument to show that to accomplish the best results, not only the remedy in its crude form but its constituents must be accurately known. Whenever an active principle is not available, the most concentrated preparations should be prescribed. In an especial degree is it necessary to have complete information regarding the dosage and actions of alkaloids. Let me emphasize in the most positive manner the importance of using the alkaloids and active principles, for by them we have minuteness of dose, singleness of action, and precision of effect.

In these "flabby days," as Mr. Froude entitles the present time, we must pay deference to taste, and secure the administration of a remedy which in a crude form may be rejected.

Under the name "*dosimétrique*" a system of therapeutics has been brought forward within a few years past, in which the point of departure is the exclusive use of the alkaloids and active principles made into granules. I will not enter into the theoretical notions on which Burggraeve bases his system. Dr. von Penterghem has done me the honor to send me his volume, which contains the dosimetric system fully elaborated, but I do not find that there is any truth which can be considered new, except the form of the medicament. Furthermore, their work is superficial. Dosimetric practitioners are imperfectly acquainted with the physiological action of remedies—their point of departure. This so-called system is, therefore, little more than a name which it was hoped, there is reason to believe, might play the rôle once the fortune of homœopathy.

That to attain to any degree of accuracy the administration of active principles is necessary is obvious enough. Crude drugs have a varying constitution due to climate, character of season, mode of manipulation, and other accidents. A notable illustration of this truth is afforded us in the composition of *Pilocarpus*. It contains two active principles: one *Pilocarpine* constant in form and powers; another *Jaborine* variable. The proportion of jaborine found in different lots of the drug *pilocarpus* varies one from another, and the process of separating the alkaloid also affects the quantity. Now as jaborine is an analogue of atropine, and therefore opposed in the entirety of its actions to pilocarpine, it is clear that the crude drug must be uncertain in its effects and one specimen vary from another in the most radical manner. In this way only can be explained the conflicts of observation first noted; for the alkaloid pilocarpine acts in a uniform manner, and must continue to do so. To obtain the desired results it is clear that the alkaloid and not the crude drug must be used.

There are many illustrations of the same truth: for example, in the actions of cinchona and quinine, opium and morphine, nux vomica and strychnine, etc.

There can be but one basis for the administration of remedies. That must be a true, exact, and intimate knowledge of the manner in which they act on the tissues and organs of the body. This knowledge, as it now stands only in part developed, is large, somewhat complicated, but quite available, and will richly compensate all who will master its spirit and form.

It is within a comparatively short period that the study of the physiological action of remedies has been the

basis of a scientific therapeutics. The opening of the present century marked the very beginning of this movement, which, even now, is far from maturity. We owe to the genius of Magendie, seconded by the labors of Bichat, the fundamental principles, and to Bernard their practical execution. It is a curious fact, that when the foundations of physiological therapeutics were being laid, Hahnemann was developing his notion of the spiritual essence in medicines under the tuition of Mesmer, who, at that time, was firing the heart of female Paris with his magnetic force. To-day, under the title of "New School Medicine," we have this eighteenth century mysticism unchanged and unchanging, whilst legitimate medicine has been continuously developing, under the inspiration of all forms of physical science. To admit that homœopathy had any influence in the shaping of scientific medicine, is to admit its right to a hearing. It had nothing to do with the new forms scientific knowledge was taking, especially not with biology. Physiological therapeutics being the form the art of cure must, of necessity, assume, is there any law or rule which may serve as a guide to practical use? Of this there can be no doubt. The law of antagonism of action is such a guide within its proper range. By this is meant such a balancing of effects that the morbid action ceases. A capital illustration of the action, and of its consequences, is afforded us in the use of amyl nitrite in the relief of that form of angina pectoris with high tension of the vessels, and of fibroid kidney by the use of nitro-glycerine. Here tissue changes are held in check, and ultimately removed, by remedies that oppose the morbid action, or that maintain a balance of effects until the lesions no longer exist.

Besides the antagonism that is direct, there is an antagonism that is similar. That a remedy which has a selective action on any tissue will have a curative action in the diseases of that tissue, is a proposition that is generally true. If the therapeutic action is similar to the morbid, the curative effect is in inverse proportion to the closeness of the correspondence.

If there be similarity of action merely, the curative effect is trivial or is entirely wanting. To illustrate: Pilocarpus is the most powerful sudorific we possess; but it is the least effective agent in the arrest of sweating. On the other hand, atropine is the most effective, and this, as all the world knows, dries the skin by stopping the action of the sudoriparous glands. If we place together the physiological agents now used to arrest sweating, we find that they are powerful in proportion to the degree in which they lessen the functional activity of the sweat-glands. Thus we have atropine, picrotoxin, strychnine, and pilocarpine. Such a fact is conclusive against the theory and practice of homœopathy.

Next to the action of physiological antagonism as a means of securing accuracy in our therapeutical methods, must be placed the use of the physical forces. The important one, and that only to which I can allude, is electricity.

Infinite harm has been done to this subject by specialism. It is not yet divorced from charlatantry of the worst sort—the pseudo-scientific. The most serious embarrassment in assigning electricity to its rightful place in our *Materia Medica*, is the complexity of the subject. Unfortunately, no man can use the agent rightly who is unacquainted with its physics and physiology. Within the sphere of its curative action, it is simply unrivalled.

That this strong statement is not universally accepted, is due to the fact that this force is not sufficiently studied, and not appreciated because its powers are not utilized. Professional scepticism, added to the ill-repute which comes of inveterate quackery, acts in turn on the minds of patients, and thus prejudice is engendered that constantly interferes with the proper development of the science.

Notwithstanding the scepticism, or the positive unbelief, there are two facts that cannot be explained away or denied—for they rest on the immutable basis of physical truth.

The first fact is, the power of galvanism to affect the circulation.

The second fact is, electrolysis, or electrolytic decomposition.

Late researches have shown that a moderate galvanic current increases the vermicular action of the vessels and thus increases the blood supply to a part, and the activity of the function of nutrition. On the other hand, strong currents tetanize the vessels and thus lessen the amount of blood passing to a part, diminishing congestion. The same laws hold good of the faradic current if the parts to be acted on are so situated that the electrodes come in contact with the tissues.

As respects electrolysis, scepticism has no ground of opposition. The same laws that regulate polar action in electrolytic decomposition, must be equally applicable within the body as without, the same substances being acted on. The action of the electrical current on the vessels, the electrolytic decomposition of materials that can be thus acted on, have brought about results not hitherto attainable. Merely as indicating results now of daily procuring, and which, no doubt, receive full consideration in the Sections, I mention only the remarkable effects had in the treatment of pelvic congestion, inflammation and its products, of stricture of the urethra, and similar lesions. Again, in affections of the trophic system, cutaneous diseases, etc., quite a different aspect has been given them by electrical treatment. Nor should I fail to mention the quite remarkable results which have been lately achieved by the combined currents—galvano-faradic.

Will my brethren who practise the obstetric art permit me to ask why post-partum hemorrhage shall not be promptly arrested by the faradic current, instead of by ergot, friction of the abdominal walls, and other reflex stimuli intended to secure uterine contractions?

There is a vast field needing cultivation in the application of hygiene to therapeutics. The comparatively new method of the dietetic treatment of disease offers us remedial agencies which certainly approximate to exactness in method, and surety in result. Time and the occasion permit me only to offer the merest hints for your serious and wise consideration.

THE CARTWRIGHT LECTURES. ON THE GENERAL PATHOLOGY OF FEVER.

Delivered before the Association of the Alumni of the College of Physicians and Surgeons, New York, April 12, 1888.

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LECTURE III.

THE ETIOLOGY OF FEVER.

WE considered in the last lecture the experimental evidence concerning the effects of increased bodily tem-

perature. An advantage of the experimental over the clinical method of investigating this subject is that it enables us to study the effects of heat upon the whole body and its various functions without the intervention of disturbing factors, such as infection, which complicate the clinical analysis of febrile phenomena with reference to this question.

We found that animals may be kept at high febrile temperatures for at least three weeks without manifesting any serious symptoms. The only functional disturbances which could be attributed directly to the influence of the elevated temperature were increased frequency of respiration and quickened pulse. The rapid respiration was found to be due partly to stimulation of the skin by external heat and by the warmed blood, and partly to the action of the warmed blood on the respiratory centres. The quickened pulse could be positively referred to the effect of the warmer blood upon the heart itself. No definite relation could be established between the variations of arterial tension which occur in fever and the height of the temperature.

Although the experiments narrated showed that prolonged high temperature is an element in the causation of fatty degeneration of the heart, they also indicated that other factors, such as infection, are concerned in the production of this lesion. Moreover, experimental evidence was found in support of clinical facts showing that this alteration may exist without serious interference with the functions of the heart, so that the conclusion seems justified that failure of the heart's power in fever is less an effect of high temperature than of other concomitant conditions.

Of the other disturbances in fever we learned that the increased consumption of tissue can be explained only in relatively small part by the elevation of temperature. The lessened perspiration, the renal disorders, and the digestive disturbances (with the possible exception of constipation) are referable also chiefly to other causes than the increased temperature. Both experimental and clinical observations strongly support the view now widely accepted that the disturbances of the sensorium which constitute so prominent a part of the group of so-called typhoid symptoms, are dependent in far higher degree upon infection or intoxication than upon the heightened temperature.

Although no attempt was made to analyze in detail the clinical evidence relating to the effects of high temperature, attention was called to the fact that the absence of all serious symptoms in many cases of relapsing fever, and in the so-called aseptic fevers in spite of prolonged high temperatures, strongly support the conclusions derived from the experimental study of the effects of heat upon man and animals. Even in fevers, such as typhoid fever and pneumonia, where the height of the temperature is undoubtedly a most important index of the severity of the disease, there exists no such parallelism between the temperature and the nature and the severity of the other symptoms as we should expect if these symptoms were caused by the increased heat of the body.

It was emphasized that the results of experimental investigations should not be permitted to control the treatment of fevers, more particularly the use of so-called antipyretic agents. These agents, whether hydrotherapeutic or medicinal, influence, as is well known, many

functions besides reducing the temperature. I need only refer to the powerful influence of cold baths upon the circulation and the nervous system, and to the action of antipyrin and other antithermic drugs upon the nervous system.

Reasons were given for assigning to hyperpyrexia and insolation a position separate from other febrile conditions in the discussion as to the effects of elevated temperature.

Before leaving this subject of the effects of increased temperature, I wish to call attention to one consideration which should perhaps influence our opinion on this much disputed question. Is it a matter of indifference, so far as the effects of febrile temperatures are concerned, in what manner the increase of temperature is brought about? We have seen that heat regulation, heat production, and heat loss are disturbed in fever; but, as experience shows, not always in the same manner or the same degree. In one case the incoördination of the regulating mechanism may be most apparent, the temperature fluctuating strangely up and down; in another case the heat-producing processes are excited to the utmost; and in another the circulatory changes in the skin, the vasomotor disturbances, are the most prominent phenomena. Now this varying interplay of the factors which cause febrile rise of temperature doubtless corresponds to varying conditions of innervation, of structure and of function of certain tissues of the body. May we not reasonably suppose that these varying conditions of the tissues directly associated with the rise of temperature may influence their tolerance of increased body heat? We have not the experimental or the clinical data which would enable us to give a definite answer to the question here propounded, and it would lead me too far from the theme of the present lecture to attempt to sift the equivocal evidence which might be gathered. I suggest this question, however, as one worthy of more attention than it has hitherto received.

I wish now to invite your attention to some considerations concerning the etiology of fever. In this era, when etiological studies occupy the foremost rank in medical science, it will naturally be expected that a discussion of the general pathology of fever, even though it does not aim at completeness, will not leave wholly untouched the etiological aspect of the subject.

The general etiology of fever relates mainly to a consideration of the agents producing fever, the so-called pyrogenic substances. It is, moreover, only certain general characters of these agents which can be properly considered here. Most of the questions which at present engage so prominently the attention of physicians concerning the specific causes of individual fevers belong, of course, to the special etiology of fevers, and therefore do not lie within the limits of our subject. But even with these limitations we cannot in treating of the general etiology of fever consider the febrile processes so much in the abstract as we have done hitherto. We must come into closer contact with the individual forms of fever.

At the start it should be said that probably in no instance are we acquainted with the actual substance or substances upon which the febrile disorder of animal heat immediately and directly depends. We deal here, as elsewhere in medicine, not with direct but with remote causes. But in no department of etiology have we ad-

va nced nearer the proximate causes than in many of the infectious fevers. To be convinced of the immense progress which has been brought about by the etiological study of fevers, let one glance over some of the older books on fevers, such as Percy's or Selle's,¹ with their endless divisions into symptomatic genera and species, and their barren speculations. Percy, for instance, describes no less than one hundred and fifteen different kinds of fever.

In all ages it has been customary to divide fevers into two great groups, viz.: those which are secondary to some local cause, usually an inflammation, and those which cannot be explained by the presence of any local lesion. The explanation of the symptomatic seemed so much clearer than that of the essential fevers that attempts have repeatedly been made to place all fevers in the symptomatic group. It is a curious fact that the two methods which have been of the greatest service in the study of fevers, each, when first introduced, led to an entire misconception of the nature of fever. Boerhaave, who was the first to make any extensive use of the thermometer at the bedside, supposed that this instrument indicated a reduction of the bodily temperature during the febrile chill. He therefore taught that increased frequency of the pulse and not the elevation of temperature is the constant and essential symptom of fever. If we except de Haen's correction, which never became widely known, it was not until the middle of the present century that Boerhaave's error was overthrown. A no less serious misconception sprang from the study of the pathological anatomy of fevers in France during the early part of the present century. The exaggerated ideas of the immediate followers of Bichat as to what can be accomplished by pathological anatomy led them to the belief, for a long time widely accepted, that there is no such thing as an essential fever, that all fevers are symptomatic of some local disease. This error of Broussais, one of the most influential and eloquent medical teachers of this century, is plainly traceable partly to the fact that his autopsies were chiefly of typhoid fever, and partly to the belief that the lesions found at the autopsy suffice to explain all of the manifestations of the disease during life. But we need not stop to trace the fate of the various attempts to overthrow the doctrine of essential fevers. I have mentioned one attempt chiefly on account of the suggestive lessons it conveys rather than from a desire to enter into historical details which I have hitherto purposely avoided.

The division of fevers into symptomatic and essential fevers is one of undoubted practical utility, and is not likely to be abandoned. But it cannot truthfully be said that this popular classification has been of much assistance in advancing our knowledge. Close inspection shows that the boundary lines between the two groups of fevers are vague and shadowy. Probably no one any longer believes that traumatic fever, the principal type of the symptomatic group, is due to increased production of heat in the seat of inflammation, which, acting like a furnace, was once thought to warm the whole organism, or to the irritation of nerves connected with the inflamed region. The opinion of Billroth and of Weber is now

generally accepted, that traumatic fevers are caused by the absorption of pyrogenic substances from the inflamed district. Symptomatic fevers as well as essential fevers, therefore, are dependent upon the presence within the blood of fever-producing agents. Many essential fevers, moreover, resemble the symptomatic ones in the existence of inflammation, or necrosis at the portal where there is reason to believe that the pyrogenic agents gain access to the general circulation. A distinction in these cases cannot be based on the ground that in symptomatic fevers only chemical substances, although possibly the products of bacteria, enter the circulation, and in essential fevers microorganisms invade the blood, for such a distinction would place cholera and possibly tetanus and typhoid fever among the symptomatic fevers. These considerations show how vague and unsatisfactory are the distinctions between symptomatic and essential fevers. Still, similar criticisms can be made of many of our artificial classifications which nature is under no compact to observe, and we should undoubtedly be put to great inconvenience if we attempted to dispense with the epithets symptomatic and essential as applicable to different forms of fever. There are, however, other points of view which seem to me more fruitful in the study of the etiology of fever than those embodied in these distinctions. I refer to the differences in the nature of fever-producing agents, concerning which our knowledge, although still very imperfect, has been materially increased within recent years. And here again we are greatly indebted to the results of experiments upon animals.

Much light has been shed upon the causes of a certain class of fevers by a series of experiments, which received their impulse from the important studies of Alexander Schmidt and his pupils upon the physiology of the blood. A particular direction was given to these experiments by the often repeated observation that fever and other injurious effects may follow the transfusion of blood, especially when the blood of one species of animal is transfused into an animal of another species. In order to test the supposition that these bad symptoms are due to an excess of fibrin ferment Köhler¹ injected into the vessels of animals blood made rich in fibrin ferment and fibrino-plastic substance, and found that this blood when injected in large amount into the jugular vein causes sudden death by rapid coagulation of the blood in the right heart and pulmonary arteries, but when injected in smaller amount or in a different manner produces a typical febrile attack bearing a close resemblance to that following the injection of putrid fluids. Angerer² then found that a similar fever, although less intense and more gradual in its development, may be produced by the injection of blood into the peritoneal cavity or the subcutaneous tissue, or even by an extravasation of blood. Although in these experiments it was believed that fibrin ferment is the pyrogenic agent, Edelberg³ was the first to produce fever and other symptoms of intoxication by the injection of this ferment isolated according to Schmidt's method.

¹ Köhler: Ueber Thrombose und Transfusion, u. s. w. Inaug. Diss., Dorpat, 1877.

² Angerer: Klin. u. Exp. Untersuch. üb. d. Resorption v. Blutextravasate, Würzburg, 1879.

³ Edelberg: Arch. f. exp. Path. u. Pharm., Bd. xii.

¹ Percy: Die gesammte Fieberlehre, Pesth, 1820. The original is in French.

Selle: Rudimenta Pyretologiae Methodicae, Berolini, 1773.

In the light of these experiments it was to be expected that other ferments would be examined with reference to their pyrogenic power. Schmiedeberg¹ discovered that injections of histozyme into the blood of dogs produced high fever associated with general illness, and particularly with diarrhoea. The ferment to which Schmiedeberg has given the name histozyme he believes to be present normally in small amount in the body, and to be concerned in the dissociation of the nitrogenous constituents of the tissues. He concludes from his experiments that an excessive accumulation in the body of this normal ferment gives rise to fever with increased metamorphosis of nitrogenous materials. Schmiedeberg thinks it probable that the fibrin-ferment solutions employed by Edelberg in his experiments contained also histozyme, and that the pyrexia was due to the latter substance.

Following these observations concerning the pyrogenic power of fibrin-ferment and histozyme comes the discovery of von Bergmann and Angerer² that injection of pepsin and of trypsin into the blood of dogs causes a well-marked fever with characters like those of the other ferment intoxications described. A valuable calorimetric study of pepsin and trypsin fevers has been made by Wood, Reichert, and Hare.³ These authors, as well as Ott,⁴ have demonstrated that it is not the pepsin and the trypsin ferments themselves which constitute the pyrogenic agents, but some contaminating substance, which seems to be a peptone. That peptones artificially prepared contain poisonous principles has been known for some time, and Brieger⁵ has succeeded in isolating a crystallizable poisonous ptomaine, called pepto-toxin, from commercial peptone and from that formed by the artificial digestion of fibrin. This ptomaine, however, is not identical with the pyrogenic agent found by Ott and by Wood and his colleagues in commercial pepsin. To this list of pyrogenic substances obtained from impure ferments may be added leucin, and, according to Ott, papayotin and neurin which produce marked fever when injected into the blood in small quantity. The substance sold under the name of papoid possesses marked pyrogenic power when its filtered aqueous solution is injected into the blood. This substance contains principles belonging to the peptone or albumose group. Dr. Mall, Fellow in Pathology at the Johns Hopkins University, has isolated from commercial papoid a bacillus, which in pure cultures exerts a powerful peptonizing action on fibrin and on connective and elastic tissues. The bacillus itself is not pathogenic, but an albumose or some similar substance produced by its activity, has pyrogenic power when injected into the blood.

It does not appear that any one has actually isolated the pyrexial agent from the various ferments employed in these experiments. Certainly no such agent has been obtained in a crystalline form, which is the test of its purity, if we except Brieger's pepto-toxin, the pyrogenic capacity of which has not been established. It has been alleged that the fever-producing agent is the same in all these ferment intoxications, but this has not been proven nor does it seem probable.

On better grounds it has been urged by von Bergmann and Angerer, that all of the substances in the group of pyrexial agents now under consideration, cause fever by producing the same change in the blood. These authors claim that this change is the formation in the circulating blood of an excessive amount of fibrin ferment, which leads either to coagulation or to stasis in the capillaries, particularly those of the lungs and of the intestines. One of the main arguments for this view is the fall of blood pressure which von Bergmann and Angerer observed after injections of pepsin and of pancreatin, but this fall can be explained in other ways than by supposing that the pulmonary capillaries are occluded, and, moreover, Wood, Reichert, and Hare find that the blood pressure often rises in the course of pepsin fever. It does not seem to me that we are any more able to explain in exactly what manner the pyrogenic substances act in this class of fevers than in other fevers. The idea, however, that the liberation of fibrin ferment in abnormal quantity is capable of causing fever, finds support not only in experiments which have been mentioned, but also in the fact that injections of hæmoglobin solutions, and of large quantities of water into the blood, produce fever.

But you, perhaps, by this time have asked yourselves what bearing all of these experiments with various pyrogenic substances have upon the etiology of human fevers. They have, in my judgment, an important bearing on this subject. However obscure may be the explanation of the mode of action of these substances, however doubtful may be their exact chemical composition, they have certain common characteristics which are calculated to shed light upon the causation of some obscure febrile disorders of human beings. In the first place, the members of this group of pyrogenic substances, if not identical with certain physiological ferments, are readily produced by them, quite independently of the action of bacteria or other microorganisms. In the second place, some of these substances are present normally in small amount in the body, and if their elimination is impeded, or their formation is excessive, there is reason to believe that they become efficient causes of fever. In the third place, these pyrogenic substances may be produced, again without the action of bacteria, in extravasated blood, or by the abnormal disintegration of tissues, and if they are absorbed from these sources in such a condition, or in so large an amount that nature cannot render them harmless, they are capable of producing fever. It is customary to call the morbid condition produced by the absorption of these substances, ferment intoxication in analogy with the term putrid intoxication, applied to the diseases caused by the absorption of the products of putrefactive bacteria. The term ferment intoxication seems to me to imply more than our knowledge warrants, but it is not of much use to contend against names which have gained currency. It is probable that some of the pyrogenic agents in this group belong to the class of leucomaines, but our present information regarding these bodies does not justify any positive statements on this point.

Although the etiology of individual fevers does not belong to our subject, I cannot forbear calling your attention to certain febrile conditions which seem to be produced by the accumulation of substances that are either normal constituents of the body or are the result of chemical processes, differing but little from physiological ones.

¹ Schmiedeberg: *Ibid.*, Bd. xiv.

² Von Bergmann u. Angerer: *D. Verhältniss d. Fermentintoxication. Festschrift, Würburger Universität, 1882*, i, 135.

³ Wood, Reichert, and Hare: *Therapeutic Gazette*, 1886.

⁴ Ott: *Journal of Physiology*, vol. viii.

⁵ Brieger: *Ueber Ptomaine*, Berlin, 1885.

To this category probably belongs the so-called aseptic fever, first described by Genzmer and Volkmann.¹ These surgeons have established the fact that there are traumatic fevers not caused by the absorption of septic material, and that severe injuries and wounds which pursue an entirely aseptic course, are not infrequently associated with considerable elevation of temperature. This aseptic fever is usually to be observed with extensive wounds or injuries in which there is much lacerated tissue or extravasated blood to be disintegrated and absorbed. It occurs not only with wounds correctly treated by antiseptic methods, but also with subcutaneous injuries, particularly fractures of the large bones, where there can be no suspicion of the action of bacteria. Aseptic traumatic fever differs by such marked characteristics from septic fever, that there can be no doubt that the two types of fever are etiologically distinct. Aseptic fever has no prognostic significance; its only symptoms are the elevation of the temperature, which may mount to 104° (40° C.), or even 105.8° (41° C.), and the increased frequency of the pulse. The entire absence of all the intoxication symptoms of septic and infectious fevers, such as the benumbed sensorium, the dry tongue and skin, the lessened secretion of urine, I have already referred to in confirmation of the belief that these symptoms are not dependent upon the rise of temperature. Genzmer and Volkmann assign as the cause of aseptic traumatic fever, the absorption of substances resulting from the disintegration of the wounded tissues and of the extravasated blood, and state that these substances probably do not differ markedly from those produced by physiological tissue metamorphosis. This explanation certainly has received decided support by the experiments which I have described in this lecture, a large part of which have been performed since the publication of Genzmer and Volkmann's article. It has been suggested that aseptic traumatic fever is a reflex neurosis, and this suggestion cannot be absolutely rejected as a possible explanation, but for various reasons, which cannot here receive further consideration, the usually accepted explanation is the more probable one.

An instructive case of ferment intoxication has been reported by Cramer.² There existed in a young woman a cyst, the size of a goose's egg, between the fibres of the semitendinosus muscle. The cyst was developed from a cavernous angioma, and was filled with dark fluid blood. The patient had had fever for almost two years up to the day of the operation. The cause of the fever could not be discovered. Immediately after the removal of the cyst the fever stopped and did not return. In this case the cavernous structure of the cyst wall accounts for the ease with which we must suppose a considerable quantity of the pyrogenic substance was continuously absorbed from the bloody contents of the cyst. The results of Angerer's experiments, already mentioned, enable us to explain the source of the fever in this case.

Another instance may be cited in which fever is probably to be explained by the accumulation within the body of products of normal metabolism. More or less fever appears to be a constant accompaniment of the agonizing method of treatment known as the Schroth cure. In this treatment the patient is kept for a number

of successive days on dry food with scarcely any fluids. Both Bartels and Jürgensen,³ who have investigated the nutritive changes of individuals under this treatment, believe that the body becomes so poor in water that some of the products of regressive metamorphosis cannot be carried out of the system. This certainly seems very probable, and, if true, it affords in the light of recent experiments an explanation of the accompanying fever.

I believe that good reasons can be adduced in support of the opinion that the febrile conditions sometimes associated with leucocythæmia, profound anæmias, and chlorosis belong to the group of fevers we are now considering. It is probable that some of the obscure ephemeral fevers are also to be included here. But to consider these febrile disorders in detail would lead us into the domain of special etiology upon which we have already perhaps encroached too far. My purpose has been to bring before your attention only a few clinical examples in illustration of the experimental results.

I think that you will agree with me in the conclusion that experimental and clinical evidence justify us in recognizing as a distinct group of pyrogenic agents, substances which have no necessary connection with microorganisms, and which are either not foreign to the healthy organism or are readily formed by unorganized ferments from normal or abnormal constituents of the body. These substances may be described as homologous in distinction from the heterologous agents concerned in the production of septic and infectious fevers.

A class of pyrogenic agents of far greater clinical importance than those previously considered is formed by the products of microorganisms which in themselves are not pathogenic. A considerable number of bacteria, which when inoculated in pure culture into the body are not capable of further invasion or of multiplication, produce in culture fluids and in dead animal or vegetable material poisonous substances often of great virulence. Exception may be taken to the description of these organisms as non-pathogenic, inasmuch as the products of their activity are poisonous, but the epithet pathogenic is usually assigned by bacteriologists only to such microorganisms as are capable of multiplication within the body. If we called all of the microorganisms pathogenic which produce poisonous ptomaines we should have to include in this category a far larger number of the known species of bacteria than has hitherto been customary.

The best known and most important of the fevers produced by chemical products of saprophytic bacteria are those grouped under the name putrid intoxication. Until the introduction of the modern era in bacteriology by Koch nearly all of the experimental work on the etiology of fevers related to the causation of the septic and putrid fevers. It is instructive with our present knowledge to follow the experiments on this subject from the period of Gaspard, Magendie, and Sedillot up to recent times. What light has been shed upon the mass of contradictory and perplexing results of experiments with putrid fluids by the recent chemical and biological studies of putrefactive processes? Some of the putrid substances experimented with undoubtedly contained parasitic microorganisms, and others contained only obligatory saprophytes. Some were rich in poisonous ptomaines, and

¹ Genzmer and Volkmann: Volkmann's Sammlung, No. 121.

² Cramer: Verhandl. d. Deutschen Gesellschaft f. Chirurgie, 13th Congress, 1884.

³ Jürgensen: Deutsches Arch. f. klin. Med., Bd. i.

others were nearly devoid of them. The whole doctrine of the parasitic nature of infectious fevers seems to have hinged in the minds of some upon the determination of the question whether septic and putrid fevers are produced by the absorption of chemical substances, or by the invasion of pathogenic bacteria. The ideas concerning putrid intoxication dominated at one time the whole field of fever etiology, and were applied not only to septicæmia but to typhoid fever, typhus fever, yellow fever—in fact, to nearly all infectious fevers. Nor have the echoes of this period even now entirely died out.

Panum was the first to isolate from putrid materials some chemical substance or substances in tolerable purity, certainly free from bacteria. This substance, when injected into animals, produced symptoms of putrid intoxication. Subsequently, von Bergmann and Schmie-deberg isolated from putrefying yeast a poisonous crystalline substance, their celebrated sepsin. For a time the opinion prevailed that this sepsin is the source of all putrid intoxications. Thanks to the investigations of Nencki and others, and particularly of Brieger, we now know that many alkaloidal substances can be separated from putrefying materials. Some of these so-called cadaveric alkaloids or ptomaines are poisonous, fever-producing, others are harmless. There is no reason to suppose that the list of the ptomaines of putrefaction has been exhausted, nor is it necessary to believe that all of the poisonous constituents of putrefying materials are of an alkaloidal nature.

Most of the bacteria concerned in ordinary putrefactive processes are purely saprophytic. They are incapable of multiplication in the living animal tissues. In a mixture of putrefactive bacteria it is not, however, uncommon to find genuine pathogenic or parasitic bacteria. It was from such sources that the bacilli of mouse septicæmia and of rabbit septicæmia (Koch) were obtained. The bacillus of malignant œdema is also often found in the early stages of post-mortem decomposition.

There is, of course, no doubt that the absorption of the chemical products of putrefaction may produce fever with septic symptoms, quite independently of the penetration and multiplication within living tissues of bacteria.

Here belong certain cases usually described as septic, in which fever and other bad symptoms subside upon the thorough cleansing and disinfection of a foul wound, or of a puerperal uterus. The majority of cases of septicæmia are not to be included here, for they depend upon the invasion of pathogenic bacteria. But, excluding the cases of genuine septicæmia, there remain the putrid intoxications which result from the absorption of poisonous substances produced in necrotic or disintegrating tissues, or exudations, or extravasated blood, by the action of purely saprophytic bacteria. The ideas which I have expressed on this subject are now so generally admitted that they require no further elucidation.

It is probable that fever, with symptoms of intoxication, although generally of a much milder nature than in the class of cases just considered, may be produced by abnormal fermentations and putrefactions caused by saprophytic bacteria in the alimentary canal. But here the essential morbid conditions seem to be abnormalities in the gastric and intestinal contents, due partly to the character of the ingesta, but chiefly to alterations of the digestive juices. Fermentative and putrefactive bacteria are normally present in the intestinal canal, and have

abundant opportunities to gain access to this situation. The number, however, which can multiply and thrive there is quite limited, for under normal conditions, according to Escherich, only such bacteria can multiply to any extent in the intestinal canal as are capable of growing with little or no oxygen, and of deriving their nourishment from the anaerobic fermentation of the food supplied to them in this situation. Suitable conditions for the excessive multiplication of putrefactive or fermentative bacteria may, however, be furnished by abnormalities of the gastric or intestinal contents.

Of a far more serious nature are the putrid or ptomaine intoxications which result from the ingestion of substances which have undergone outside of the body putrefaction, or changes which lead to the formation of poisonous ptomaines. To this group of cases belong at least many of the instances of poisoning which have been caused by eating certain kinds of meat, sausage, fish, cheese, etc. In some of these instances poisonous ptomaines have been isolated from the suspected substances, but we know scarcely anything of the microorganisms which are concerned in their production.

It is important to bear in mind that it is not stinking putrefaction alone which gives rise to poisonous products. Brieger has found that such products may be absent in very advanced decomposition, and that in general the most virulent products are formed in the early stages of putrefaction. We know, furthermore, that putrefactions and fermentations differ in the character of their products. There are differences according to the kind of bacteria present, according to the substances decomposed, and according to various other conditions, such as the presence of oxygen, the temperature, etc. This is not the proper occasion to discuss these details.

Enough has been said to prove that we are justified in recognizing as a second class of pyrogenic agents substances which are the products of bacteria in themselves not pathogenic. These pyrogenic agents may be formed on or within the body, or they may be produced outside of the body. I would not by any means have you infer that it has been proven in all of the special examples which I have mentioned, that the bacteria involved are not pathogenic, or capable of multiplication within the living tissues. We have not sufficient knowledge to assert or to deny this in every instance, but I do not think that it is likely exception will be taken to the classification which I have adopted for most of these cases. As has repeatedly been mentioned, our purpose here is not an analysis of individual cases of fever, but an attempt to classify systematically the various pyrogenic substances.

(To be concluded.)

ORIGINAL ARTICLES.

A PRELIMINARY CLINICAL NOTE ON A FEBRILE EXANTHEM (ROSEOLA VACCINA) ACCOMPANYING VACCINATION.

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OUT of ten recent vaccinations with bovine points procured from a reliable apothecary, the Philadelphia agent for a New England vaccine company, it has

been my somewhat remarkable experience to encounter two very severe cases of this peculiar and rather rare rash, the course of which was so typical, and the accompanying febrile disturbance so pronounced, that a recital of the histories as a preliminary note may not be uninteresting, prior to presenting a more extended report on similar cases which I have seen, occurring in the practice of other physicians.

CASE I.—Henry L., aged four and a half years, a well-grown, strong, hearty boy, was vaccinated on April 20th. On the morning of the eighth day subsequent to vaccination, an irregular, rather large pustule, surrounded by a deep, highly inflammatory areola, occupied the site of vaccination. The whole arm was red, much swollen, and several enlarged, painful glands occupied the axilla of the same side. Slight feverishness had been remarked for twenty-four hours, associated with anorexia, nausea, and a heavily furred tongue. The fever had been decided on the evening before, and was accompanied by delirium, restlessness, and a discrete, small, very slightly raised, rose-colored erythematous rash, which was noticed first on the vaccinated arm, but which on the morning of the eighth day was evenly though lightly distributed on the extremities, face, neck, and trunk. During the early evening of this day I was summoned in alarm by the parents, the fever and rash having greatly increased. The latter now covered the entire body, and had become largely confluent in parts, particularly about the extremities and face, the latter being decidedly tumefied; while the abdomen, chest, back, and neck were very plentifully and regularly spotted with roseolous maculæ and soft, very slightly raised papules, so that no part of the surface of the body was free, though the wrists, flexures of the knees, and ankles were but slightly discolored. Considerable pyrexia was present, judging from the bounding pulse, surface heat, and great thirst. The temperature was not then taken.

At ten P.M., during a restless sleep, a severe general convulsion occurred, lasting nearly an hour, and consisted of alternate tonic and clonic spasms, but especially the former. It was repeated at three on the following (the ninth) morning. The temperature was then $106\frac{1}{2}^{\circ}$, the pulse 160, the extremities cold, and the body surface of a burning heat. The throat was not sore, the glands of the neck not swollen, and no catarrhal symptoms or cough were present. Potassium bromide and a fever mixture of aconite and spirits of nitrous ether were administered, a large enema was given to clean out the bowels, which, however, were said to have been loose on the preceding day. These means, combined with heat to the lower extremities, and constant cold to the head, probably prevented a return of the convulsions, but did not assist materially in

lowering the temperature, which at eleven in the morning was $106\frac{1}{2}^{\circ}$, and the pulse 150.

The vaccinated arm was now exceedingly swollen, painful, and angry, while the areola about the pustule had become part of the general redness. The eruption was fully out. It had not the distinctive appearance of the rash of measles, scarlatina, or röteln, but closely resembled the prodromic exanthem of variola, the *roseola variolosa*, and consisted of a hyperæmic macular erythema, which through the intensity of the systemic disturbance had become largely confluent. At first the maculæ and small papules—the latter of which throughout the disease were soft, and but very slightly raised, and at no time became vesicles or pustules—disappeared on pressure, but soon pressure ceased to efface them, and, about the back, thighs and legs, the diffused rash became decidedly purpuric, leaving, as it faded, subcuticular stains which persisted for a number of days.

On the morning of the tenth day, active antipyretics having been used in the interim, there was a decided improvement in his condition, the temperature was but 101° , the mind was now clear and the tongue less furred. There had been restlessness at intervals through the day and night with slight mental wandering and clonic masticatory spasm, which had ceased as the fever lessened. The urine was examined for albumin during the height of the fever, but with negative results.

I did not have an opportunity of seeing this case again until the fourteenth day following the vaccination. Pyrexia was then absent. The mother thought it had been slightly present on the eleventh day, but she had not observed it since. The rash, on this visit, presented the appearance described above.

CASE II.—J. P., a hearty boy of four years, was vaccinated on April 17th. His was a primary vaccination, as, indeed, were all the six cases in which I have met this rash. The course pursued by the vaccination in this, as in Case I., was scarcely typical; no distinct papule had formed on the fourth day, and when seen again on the seventh day, a small irregular foveated vesicle was present, containing opaque lymph and an areola was in process of formation. The arm was then much swollen and so continued for a number of days. The pustule appeared early, was large and somewhat irregular, and the areola present rapidly spread until the whole arm became intensely red. On the evening of the sixth day of the vaccination signs of constitutional disturbance appeared, such as vomiting, furred tongue, anorexia, fever and delirium. These continued, and, on the evening of the seventh day, a rash having the characteristics of that described in Case I., was noticed about the chin, chest and back, which on the eighth day had spread to all parts of the body. It was quite as intense as that of Case I., and, like it, consisted of slightly raised soft papules and large and small roseolous macule, which formed, as it progressed, more or less confluent patches in some situations, notably the arms, thighs, nates, and portions of the back. Unlike the rash in Case I., some of the patches at first assumed an irregular

¹ Since writing the above, another case has come to me, making the number three out of seventeen. This one is of a milder type than either of the two described. It is that of an infant aged eight months, in St. Christopher's Hospital.

crenate shape, somewhat suggestive of measles, but this was very transitory. On the most dependent parts, such as the back, nates, and posterior aspect of the thighs, where the rash later became largely purpuric, the color was, even from the first, decidedly purplish. Coincident with the generalization of the rash the temperature mounted, reaching $105\frac{1}{2}^{\circ}$ at noon of the eighth day; but shortly after its full appearance a rather rapid fall took place, with an amelioration in the other symptoms. At noon on the ninth day, the temperature was $102\frac{1}{2}^{\circ}$, and on the following day the mother believes there was slight, if any, pyrexia present. There were no catarrhal symptoms and no sore throat; the urine was not examined.

Slight desquamation, not observed in Case I., accompanied in some situations, notably the back, the fading of the rash. Purpuric stains persisted on the thighs and nates for some days subsequent to recovery.

Under the title vaccinal eruptions are described a variety of acute eruptive disorders occasionally accompanying vaccinia, few of which can be regarded of special significance, since their presence may be explained more readily by extraneous causes than by any supposed specific action of the vaccine virus. I shall omit special mention at this time of the various local and general vesicular, pustular, urticarial, bullous, erysipelatous, and gangrenous rashes which, from their polymorphous character, irregular period of onset and erratic course, may well be considered to owe their existence to constitutional peculiarities, or to impure lymph,¹ or to accidental inoculation with septic matter at the time of the vaccination, or to the absorption of septic material from the ruptured or unruptured pustule.

We must, I believe, look elsewhere for the cause of the febrile roseola. In the six cases which I saw the incubation period seemed so exact, the characteristics of the eruption, its life history, and the constitutional disturbance were so similar as to indicate the presence of an element of specificity not manifested by the other varieties I have mentioned. Indeed, one cannot but be struck with the resemblance between this rash and the most frequent of the occasionally occurring prodromal exanthems of smallpox, the roseola variolosa, and I am inclined to believe this resemblance is more than superficial.

¹ An interesting account has just appeared in the Report of the Royal Bureau of Hygiene, of Berlin, concerning certain eruptions attending successful vaccination with lymph from young kine on the vaccine farm at Eberfeld. The rashes were of the nature of aggravated forms of urticaria, herpes, and contagious impetigo and pemphigus. The constitutional symptoms were so severe that several deaths occurred among children. The cause was at first a mystery, as the farm was in apparent good order and the officials reliable and skilful. By order of the Government three suspected heifers, in which, however, no disease could be discovered, and the various appliances used in inoculation were destroyed, after which no more rashes occurred.

I am in agreement with those who, like Friedinger,² look upon this rash, when occurring after vaccination, as an evidence of systemic infection by the vaccinia and that a direct relationship probably exists between it and the contagium of the disease.

Hebra speaks of a local vesicular rash occasionally following variolous or vaccinal inoculation as a part of a general disease, but he regards the roseola vaccinia as the commonest and most significant of the general rashes, and believes it due to the contagious principle causing a lymphangitis which, when it assumes a severe type, may be the cause of extensive cutaneous inflammations, such as erysipelas, cellulitis, abscess, etc. He places the date of appearance of the roseola between the third and the eighteenth day, and considers its duration ephemeral and the constitutional disturbance slight.

Behrend,³ who gives a succinct, though in parts superficial, account of the various vaccinal eruptions, but whose acquaintance with the form under consideration seems slight, mentions it as appearing on the eighth day in two cases observed by him. In all of the six cases that I saw it appeared between the seventh and the ninth day.⁴

The question may perhaps be asked if this rash is not an accidental accompaniment of the vaccinia, why is it not encountered oftener? and it would be as difficult to answer as the same question regarding the infrequency of the prodromal rashes of variola. The whole subject of vaccinal eruptions merits and would well repay a careful reinvestigation.

628 NORTH FIFTH ST., PHILA.

NOTES ON THE EMPLOYMENT OF URETHAN AND OF AMYL HYDRATE IN INSOMNIA.¹

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OWING to the demand for some efficient and safe internal remedy in insomnia, the number of hypnotics is constantly assuming larger proportions. We shall enter into no discussion of the merits of some of these. The disadvantages of opium, and the good and bad points of the bromides and of Cannabis Indica, are well understood. Hyoscine

¹ Friedinger: Mittheilungen der Wiener med. Doctoren-Collegium, 1875.

² Vaccinal Eruptions, Arch. Derm., Oct. 1881.

³ In two of my cases at the end of the seventh day; in the third, on the seventh or eighth; in three on the ninth, seen through the kindness of Dr. Wm. M. Angney and Dr. Charles Pottberg.

⁴ Read before the Philadelphia Neurological Society, January 26, 1888.

has undoubted hypnotic power, as common experience proves; but it can by no means be placed in the list of pure hypnotics, and its use is often accompanied by very unpleasant secondary effects; besides being not devoid of danger in dose sufficient to produce sleep. Chloral, though perhaps after all more sure and powerful than any of its congeners, often has great disadvantages attending its employment. Its hypnotic action is very commonly preceded by delirium, and sometimes this is the only result of its administration; or there may be no effect at all observed. Moreover, cases have been reported by different observers where a single and even small dose has proved fatal; and on account of its depressing action on the heart, respiration, and nervous system generally, it cannot be called a pure hypnotic. Then, too, there exists the danger of the *chloral habit* and of chronic chloral poisoning, if the employment of the drug be long continued. Ward (quoted by T. M. Lloyd, *Therap. Gazette*, February, 1888) has seen "no untoward result of any nature whatever" follow its use during an experience of fifteen years among the insane, and doubts the existence of such a thing as the "chloral habit." There are others who are inclined to adopt the same view; but those who are sceptical as to the deleterious effect which may follow the continued administration of chloral may find a mass of convincing evidence in the able article by Rehm, in the *Archiv für Psychiatrie*, 1886, Bd. xvii. 36. Although, then, chloral is an invaluable remedy, whose place in some cases cannot be taken by any other drug, the possible dangers attending its use, particularly in a condition of cardiac weakness, render it advisable first to make trial of some substitute for it, if such a substance can be found.

Paraldehyde was recommended by Cervello, in 1882, and has since been used extensively as a hypnotic. It does not affect the heart or respiration in any ordinary dose, and may be given with impunity even when cardiac lesions exist. It is not, however, so powerful as chloral, and possesses certain serious disadvantages. Its dose, mainly, is large, and it has a very unpleasant taste, which remains in the mouth long after the medicine has been swallowed. It may cause vomiting when the stomach is irritable, and in any case it is apt to produce unpleasant eructations, while its disagreeable odor remains on the breath sometimes for days. It is also said to cause great excitement at times, and a recent writer reports two cases where its continued use in large doses induced symptoms resembling those of chronic alcoholism; but this must be a very unusual occurrence. Sommer (quoted in *Therap. Gazette*, August, 1886) reports a case of scarlet injection of the skin, twice occurring after the ingestion of the drug; and Eickholdt (*Ibid.*) has observed cerebral congestion and vasoparalytic symptoms after its prolonged use.

Various other hypnotics have been more recently proposed, such as urethan, amyl hydrate, hypnone, and methylal.

The first two mentioned are receiving the most attention, and we desire here to report our experience with them in a number of cases.

URETHAN.

Urethan, or ethyl carbamide, was first used by Schmiedeberg on animals, and by Jolly on men. It is an ethylic ether of carbaminic acid, with the chemical formula $\text{NH}_2\text{CO}_2\text{C}_2\text{H}_5$, and consists of white crystals freely soluble in water, and with no odor and but little taste. It was brought into prominence in 1885, by von Jaksch (*Wiener med. Blätter*, 1885, Nos. 33 and 34), who administered it 110 times in 20 cases. In doses of 7 grains it was an uncertain hypnotic, but when 30 grains were employed he never failed to obtain the desired effect. The amount usually given was 15 grains, which was found sufficient to produce a natural sleep. The drug appeared to be entirely harmless in any medicinal dose, and produced no unpleasant after-effects.

Since von Jaksch's publication urethan has been tried quite extensively. Among the published reports of it may be noticed that of Kräpelin (*Neurolog. Centralbl.*, March 1, 1886), who gave it in doses of 15-45 grains 200 times in 34 cases. He considers it a pure hypnotic, but far inferior to paraldehyde if there has been much excitement, and worthless in delirium tremens. Usually more than 15 grains is required in any case.

Eloy (*L'Union Méd.*, Nos. 36 and 37, 1886) thinks it a powerful agent in doses of 30-60 grains. He has used it in 90 cases.

Scharschmidt (*Therap. Monatsh.*, Sept. 1887) considers it useless in doses of less than 75 grains.

Savage (*Practitioner*, 33, 1887) administered it in doses of 60-120 grains, and says that sleep often comes in one-quarter of an hour. He does not, however, appear to consider the drug at all reliable.

Myrtle (*Brit. Med. Journ.*, February 20, 1886) has seen its good effects in more than 50 cases of insomnia and restlessness from various causes.

Sticker (*Deutsch. med. Wochens.*, No. 48, 1885) has also obtained favorable results with it, and says the dose may be increased to 60 grains without danger. He further states that too large a dose will sometimes have no effect, when a smaller one will bring sleep.

Bigelow (*Amer. Journ. of Obstet.*, 708, 1887) writes that 15-20 grains give a long, pleasant sleep, and claims that the drug is also an analgesic.

Langovoi (quoted in *Therap. Gazette*, 1887, p. 337) states that the drug is not a powerful hypnotic, and in some cases is ineffectual. It is unreliable but harmless. It may be useful in nervous insomnia and in sleeplessness in the acute fevers.

Ughi (quoted in *Wien. med. Wochens.*, August 27, 1887) says that doses of even 30-60 grains are inconstant in their hypnotic effects.

Andrews (*Weekly Med. Rev.*, July 30, 1887) has used it in doses of 30 grains in 18 cases of insanity of different forms. About 80 doses in all were given. It produced sleep in about an hour, which lasted through the night. He considers that it has marked hypnotic power, and that it is accompanied by no unpleasant secondary effects.

Sansom (*Valvular Diseases of the Heart*, 1886, 102) considers urethan the most satisfactory agent he has employed as a simple hypnotic in heart diseases. He has found 15 to 20 grains at bedtime induce calm, natural sleep, lasting 5 hours or more, and producing no adverse symptoms.

Carriell (*Therap. Gaz.*, 1888, 101) says of its use in the insane, that it has not produced sleep in 30 grain doses.

Finally, Rottenbiller (*Centralbl. f. Nervenkrankh.*, 1886, No. 10) has given urethan hypodermatically 240 times in 14 cases of mental disorder, and found it ineffectual in amounts less than 30 to 60 grains, while it is not well borne in quantities larger than this. Its action is not very certain. In 8 cases it produced tranquil sleep for 6 to 8 hours, and in 4 others for only 2 to 4 hours. In 1 instance it failed utterly, and paraldehyde was given with success.

In the latter part of 1886 one of us began some trials of the hypnotic power of urethan, and continued them at intervals up to the present time. These cases have now reached 19, and the number of single administrations, certainly over 60. Briefly reported, the cases are as follows:

CASE I.—M., male. Phthisis. Wakeful at night. On October 11th given 15 grains urethan at 9 P. M. Slept from 10.45 to 12. Soon slept again until 4.

CASE II.—H. McN., aged forty, male. Severe bronchitis. Sleeps badly on account of restlessness and cough. Given 15 grains urethan at 9 P. M., on October 8th. Slept better than usual. 10th. 15 grains at 9 last night with no effect. Repeated at 10.20. Soon slept uninterruptedly until 2.30; then with frequent wakings. For 5 nights more a dose of 15 grains was given at about 9, but with no marked result. The patient was unable to say that he slept better than when none was taken.

CASE III.—McG., male, aged thirty. Incipient tuberculosis. Troubled by insomnia, for which morphia has been given. 15 grains urethan administered on night of October 9th, and on succeeding night at 9 P. M. Slept well both times until morning. The patient, however, had slept well on the night of the 8th without any medicine.

CASE IV.—John L., aged thirty-two. Pyopneumothorax. Often sleeps badly. 15 grains urethan at about 9 P. M. every night for 5 nights, beginning October 10th. Slept well through the nights. Urethan then stopped, and patient seemed to sleep just as well.

CASE V.—G., male. Nephritis. Has difficulty in going to sleep; often lies awake until morning. October 9th. 15 grains urethan at 9, no effect. Second dose at 10.30 and slept soon after until 3. 10th. Slept well without medicine, but did not fall asleep so soon.

CASE VI.—T., male. Nephritis; great dyspnoea; orthopnoea. Sleeps but little, and morphia and chloral compound procures but a few hours rest. October 11th. Given 15 grains urethan at 9 last night, and again at 10.50. Slept shortly after until 12.

CASE VII.—Mr. S., aged seventy-two. Emphysema; great dyspnoea. October 14th. 2 doses of urethan, each 15 grains, 2 to 3 hours apart. Thinks it kept him awake. On several other occasions took the drug, sometimes using as much as 60 grains during the night. It sometimes caused nausea, seemed to increase the dyspnoea, and never exercised any hypnotic action.

CASE VIII.—Mrs. C., aged sixty-five. Hemiplegia. Usually very restless at night, and sleeps but little. October 14th. Gave 15 grains urethan at 10. In 20 minutes she was sleeping quietly until 3 A. M. On the next night slept in less than an hour after a similar dose.

CASE IX.—Lizzie P., aged forty-six. Disseminated sclerosis. Always sleeps very poorly. 15 grains urethan at 10 on night of October 13th, produced no effect at all, except some nausea.

CASE X.—Mrs. D., aged sixty-six. Intra-capsular fracture of femur. Tendency to insomnia. October 14th, 15 grains urethan at 10 P. M., had no hypnotic action.

CASE XI.—Mrs. R., aged sixty-nine. Hemiplegia. Usually sleeps very little. October 16th. Took 15 grains urethan at 10 last night. Slept soon and soundly. Woke at 3, but soon slept again. Two days later dose repeated at same hour with equally good results.

CASE XII.—Jacob W., aged eighty-one. Old hernia. Restless at night and sleeps badly. 8 to 10 grains bromide of potash usually helped somewhat. 15 grains urethan twice on the night of October 16th were entirely without hypnotic effect.

CASE XIII.—Dr. B., aged fifty. Herpes zoster. November 12th. Urethan 15 grains b. d. November 13th, 15 grains t. d. Scarcely any effect, while $\frac{1}{8}$ th grain morphia gave fair hypnotic result.

CASE XIV.—Sadie T., aged twenty-three. Friedreich's ataxia. Usually sleeps well. For several nights has been tossing, restless, "raving." Gave 15 grains urethan on night of November 26th. Little effect. Patient said she would drop asleep and at once wake again.

CASE XV.—Mrs. O., aged seventy. Ulcerative keratitis. Sleep has been restless for some time. 15 grains urethan on night of November 1st had very little effect. Bromide was of little good in this case unless given with morphia.

CASE XVI.—K., aged forty-five. Fracture of ribs. Urethan in doses of 10 or even 20 grains gave no relief to great sleeplessness. Morphia acted like a charm.

CASE XVII.—Miss N., aged forty. Rheumatoid

arthritis. Very restless at night without much actual pain. 15 grains urethan repeated in a few hours and tried on two successive nights had no appreciable effect.

CASE XVIII.—Mary S., aged twenty-five. Contraction of lung after pleurisy. Phthisis? Has dyspnoea; troublesome cough; has been sleeping very badly. Took 15 grains urethan at 10 on night of November 10th. Asleep in an hour. Slept an hour. Repeated the dose at 12. Slept soon after, but restlessly. Thinks she slept but little better than usual.

CASE XIX.—Walter S., aged thirty-five. Typhoid fever, third week. Very wakeful for some nights. March 7th. 20 grains urethan at 1 A. M. No effect. 30 grains at 4 A. M. Slept after about $\frac{1}{2}$ hour for 2 to 3 hours. 10th. 30 grains urethan at 11 P. M. Slept after about $\frac{1}{2}$ hour all night; but had also shown disposition to sleep during the day. 14th. 30 grains urethan given in the morning were at once vomited.

To sum up, we see that out of 19 cases there have been but 2 (VIII. and XI.) where the hypnotic action was really satisfactory. In a few others the effect was slight, or it was doubtful whether the sleep could be attributed to the action of the medicine, and would not probably have been obtained without it. In 3 cases (VII., IX., XIX.) there were unpleasant secondary effects, though in the last case the stomach was irritable to other drugs usually well borne. It may be objected that the amount generally employed (15 grains) was too small. This may possibly be true, though it is that usually recommended by the earlier writers, and which we therefore adopted. Moreover, the dose was frequently repeated in 2 hours or less, and in one case (VII.) as much as 60 grains were given during the night without hypnotic effect. It is also true that a few cases constituted too severe a test for a simple hypnotic, as pain or persistent cough was present. We must, nevertheless, conclude that, as far as our experience goes, urethan is an uncertain and unreliable hypnotic, though in large doses it will at times prove useful, and has advantages which at least recommend it for trial in some cases.

AMYL HYDRATE.

Amyl hydrate or dimethylethylcarbinol, which promises to become a valuable therapeutic agent, was first studied by von Mering (*Therap. Monatsh.*, July, 1887). It is one of the tertiary alcohols, its formula being $(CH_3)_3C(C_2H_5)OH$. It is a colorless fluid soluble in 8 parts of water, and with a smell somewhat like camphor and peppermint. The taste is pungent and unpleasant, though less disagreeable than that of paraldehyde; and the medicine leaves no odor upon the breath. V. Mering administered it to 60 cases of insomnia from various causes, and in only 4 did it prove inefficacious. 2 cases of whooping-cough were relieved by it. The total number of doses

given was 350, of 45 to 75 minims by the mouth or by rectum. Its principal action is on the cerebrum, and it is unreliable in producing sleep if pain be present. The author claims that it does not cause headache, nausea, or disturbance of digestion. It may be used with impunity in heart disease, since even with doses sufficient to produce profound narcosis in animals scarcely any effect on the circulation could be perceived. On this account it is greatly to be preferred to chloral; while its smaller dose and less disagreeable taste render it superior to paraldehyde. As regards its relative strength, v. Mering calculates that 1 part of chloral equals 2 of amylhydrate and 3 of paraldehyde.

Scharschmidt (*Therap. Monatsh.*, September, 1887) gives the drug by enema or by the mouth, freshly mixed with red wine or sugar, or in brandy. He gave it to 80 cases of mental disorders, with 1051 single administrations. The results were good in 869, medium in 138, and there was no effect in 44. The average dose was 30 to 60 minims. By comparative tests he found it superior to chloral, paraldehyde, and urethan, and considers it 3 times as strong as paraldehyde.

Lehmann (*Therap. Monatsh.*, December, 1887) reports 149 observations in 26 insane patients. The dose employed was 15 to 75 minims, and in 1 case 90 minims. The hypnotic results were good in 83.2 per cent. of cases. In mania large doses were required. Paralysis of the insane was benefited, but the insomnia of melancholia was aided to a less degree. It is a pure hypnotic, sleep lasting 6 to 8 hours. Slight nausea and digestive disturbance were noted in some cases. The author considers it more efficient and less disagreeable than paraldehyde.

Avellis (*Deutsch. med. Wochenschr.*, 1888, No. 1) has treated over 40 cases with more than 300 administrations of amylhydrate. It may be given either by enema or by the mouth. Sleep comes on after 15 to 45 minutes, though sometimes there is no effect at all. He considers it, on the whole, a reliable hypnotic, if a sufficient amount be employed, and there are usually no unpleasant secondary effects. Nevertheless, in 1 instance a dose of 37 grains produced a condition like drunkenness in a hysterical woman; and another patient, after the same quantity at 1 A. M., felt as though under the influence of a hypnotic the next day. The medicine rather diminishes the cough of phthisis, could be used with safety in heart disease, and was especially valuable in icteric itching. The author greatly prefers it to chloral in all affections of the circulatory apparatus. Where the stomach is irritable it should be given per anum.

Mason (*Boston Medical and Surgical Journal*, February 16, 1888) has used it successfully in a number of cases of marked insomnia. There were no ill effects at all observed, though mild intoxica-

tion occurred in a few instances. Its action appeared better than that of either paraldehyde or of urethan; and in 1 restless typhoid patient it produced a good night's sleep, when opium, chloral, urethan, and the bromides had no effect.

We have been unable to find any other literature on the use of amyl-hydrate. For the past 3 months we have been testing the virtues of the drug, and are convinced that it is a valuable hypnotic agent. We have given it in 18 cases with 85 administrations. The notes of these are in brief as follows:

CASE I.—Carrie D., aged forty-five. Opium habit. Been resting very badly; going as long as 2 days without any sleep. Has been taking bromide of potash, chloral, hyosine, Cannabis Indica, and paraldehyde, singly or combined. She often required the following formula to produce sleep: Chloral, grs. xv; potass. bromid., grs. xl; paraldehyde, grs. lx; hyosine, gr. $\frac{7}{8}$. January 10th. 40 minims of amyl hydrate were given at 9 P. M.; followed in the course of 15 minutes by a slight, happy, singing delirium. After 2 or 3 hours this gave place to quiet sleep lasting the rest of the night. The patient remarked in the morning that she had "not spent such a happy night for many a day." 11th. 25 minims given at 9 P. M. Asleep in 10 minutes, and waked but once during the night. 12th. 25 minims at 9. Same result. 13th. 40 minims at 2 A. M. Slept the balance of the night. The drug was given every night up to February 1st, with equally good results, though the dose had to be increased to 1 drachm. The patient then slept without drugs. On March 24th it was given in capsules and nicely borne.

CASE II.—William N., aged thirty-five. Alcoholic delirium; sixth attack. Very delirious, and could be kept only partially quiet by large doses of hyosine, bromide, and chloral; but these were stopped as their depressing action was feared. January 10th. Very delirious; screaming and jumping out of bed. 20 minims of hydrate of amyl were given, and the delirium ceased almost immediately, and quiet sleep for 2 hours followed in 10 minutes. Later he was quiet and rational, and slept intermittently. After this date he seemed for a time so much better that amyl was not needed, but later began to show increased signs of mental derangement, and became very maniacal. Large doses of morphia and the bromides were administered with but very little effect. 1 drachm amyl hydrate given, but only quieted him partially.

CASE III.—Robert D., aged fifty-three. Dementia. Constantly talking, mumbling night and day; very often noisy. Has taken morphia, the bromides, chloral, hyosine, paraldehyde, singly and combined in different ways. Not much effect except from very large doses of bromides, but the depressant action feared. January 15th. 30 minims of amyl hydrate at 9 P. M. Asleep in $\frac{1}{2}$ hour, and slept all night. 16th. Been very talkative during the day. 30 minims at 9. Repeated the dose at 11. Sleep in 15 minutes, which lasted 4 hours; after this did not sleep, but remained very quiet. 17th. 30 minims at

9. Asleep at 11, and slept all night. 18th. 30 minims at 9.50. Did not sleep. 19th. 30 minims at 9.50. Slept very soon until 12. Then awoke and bromides given; after which slept until 4.

CASE IV.—Annie M., aged twenty-three. Rheumatoid arthritis. Occasional exacerbations with rise of temperature, insomnia, and considerable pain. The bromides in moderate doses fail to act. January 28th. 30 minims amyl hydrate at 9 P. M., followed by quiet sleep in 15 minutes, lasting the entire night in spite of the pain. 30th. 40 minims at 9. Sleep in 15 minutes, lasting all night. The drug was used on 4 other occasions with equally good results.

CASE V.—Harry J., aged twenty-five. Advanced phthisis; hectic, great restlessness and excitement at night. January 24th. 30 minims amyl given at 9 P. M., producing, in the words of the patient, "the first quiet sleep I have had for a week." The drug used twice afterward with same effect.

CASE VI.—Henry B., aged seventeen. Typhoid fever, with phlebitis. Great wakefulness. January 25th. 40 minims amyl hydrate at 10. Sound and continued sleep in 15 minutes. On the next 2 nights a similar dose produced each time sound sleep in 15 to 20 minutes.

CASE VII.—Mendenhall B., aged fifty-five. Carcinoma ventriculi. No pain worthy of note, but great insomnia lasting all night. January 28th. 40 minims hydrate of amyl at 9 failed to act. Dose repeated at 10, followed after some time by not very sound sleep. 30th. 40 minims were given at 9. Asleep in $\frac{1}{2}$ hour, and slept until 3. 31st. Same result. February 10th. 40 minims at 9, and again at 10. Slept from 11 until 3. 14th. 40 minims at 9; repeated at 10, but slept only 3 hours. 12th. Slept all night after 40 minims at 9.

CASE VIII.—William D., aged twenty-six. Typhlitis? Was not able to sleep for 3 days before admission to hospital. Pain often severe. January 20th. 25 minims of amyl hydrate at 9 P. M., and again at 9.30, but did not sleep at all. 21st. 40 minims at 9, and again at 11. Slept until 2. After that only short naps. 22d. Pain severe. Had 20 grains bromides and 1 drachm of paraldehyde at 10; and $\frac{1}{2}$ grain morphia at 1.30 A. M., but did not sleep at all. 23d. 40 minims amyl at 9. Slept better than on any preceding night, but the pain was less. The same dose was given on 6 other occasions with favorable results.

CASE IX.—Mrs. G., aged twenty-six. Phthisis. Sleep is very poor and cough annoying. February 1st. 40 minims of amyl given at 9 P. M., with very little effect. On 3 other occasions the results were also negative; the constant cough seeming to prevent the action of the drug.

CASE X.—Owen McA., aged forty? Renal and cardiac disease. Dyspnoea; patient often has only a couple of hours sleep during the entire night. January 23d. 30 minims hydrate of amyl at 12.30. Slept all night except during two attacks of dyspnoea. On 8 consecutive nights beginning with February 11th, drachm doses of amyl procured sound sleep lasting all night except during occasional attacks of dyspnoea.

CASE XI.—Miss R., aged twenty-three. Psoriasis.

Insomnia from anxiety. 40 minims of hydrate of amyl were given for 3 nights beginning with February 9th. She slept all night, but later a placebo produced the same effect.

CASE XII.—William J., aged twenty-four. Phthisis. 40 minims of amyl were given once, but he did not sleep on account of the cough.

CASE XIII.—W. C., aged fifty-two. Cancer of the intestine? Has not been sleeping without large doses of morphia. March 2d. 40 minims amyl hydrate at 9 P. M. The patient says he spent one of the happiest nights of his life, being quiet and free from pain, although he did not sleep. 3d. Same dose followed by good sound sleep in 15 minutes.

CASE XIV.—W. D., aged forty-five. Aortic regurgitation. Sleeping very little for three nights, and dreams whenever he is asleep. March 10th. The patient was sound asleep in 15 minutes after 40 minims amyl were taken.

CASE XV.—Charles G., aged twenty. Acute mania, with almost no sleep. Patient is exceedingly noisy. January 20. 25 minims hydrate of amyl given at 9. Slept until 4; and then remained quiet, although he did not sleep. 21st. 25 minims at 9, and dose repeated at 10. Slept all night.

CASE XVI.—Peter T., aged thirty-five. Heart disease. Suffers greatly from cardiac asthma. Wakeful. February 17th. 40 minims amyl at 9. Slept about 2 hours; then awakened with an attack of dyspnoea lasting 10 minutes; then slept until 6 A. M. 24th. 40 minims at 9 failed to act on account of intense dyspnoea. 28th. 40 minims at 9. Slept 2 hours; but after that dyspnoea became almost constant.

CASE XVII.—Walter S., aged thirty-five. Typhoid fever; third week. Exceedingly wakeful and longing to sleep. March 8th. 30 minims amyl hydrate last night at 9.15, but no effect. Did not sleep until near morning. 9th. 40 minims last night at 9.15. Slept after about $\frac{1}{2}$ hour until 1; and again from 3 until 9 A. M., and feels greatly refreshed. 12th. 40 minims at 10, but the stomach had been very irritable, and vomited the medicine at once.

CASE XVIII.—Miss H., aged forty. Phthisis. Persistent coughing, not quieted by large doses of morphia, keeps her awake at night. March 19th. 40 minims amyl early in the night procured somewhat better sleep than usual; the patient coughing while asleep. Effect lasted but a few hours.

An analysis of these cases is hardly needed, as the exceedingly favorable results are evident. In only 2 cases were there any unpleasant effects; namely, in Case I., where a temporary delirium occurred with the first dose in a rather hysterical woman; and in Case XIX., where vomiting was produced, though the stomach of this patient was unusually irritable. The taste is often complained of, but we have succeeded in disguising it to some extent with liquorice, as v. Mering suggests.

We have also found it very satisfactory when given in gelatine capsules, each containing 20 minims. The ordinary capsule in two parts will answer nicely for this purpose, and will retain the drug without

leaking. A full glass of water should be immediately swallowed after the capsule, in order to avoid offending a possibly irritable stomach. In most cases there is no danger of this occurring.

Our results show that amyl hydrate does not always succeed in producing sleep. Particularly is this the case when pain is present, or when there is very troublesome cough. We believe it nevertheless to be a valuable hypnotic, more powerful than urethan or paraldehyde, and to be preferred to them; and always to be chosen in place of chloral to produce sleep, though it is not so strong as the latter drug.

MEDICAL PROGRESS.

The Treatment of Rectal Pain by Conium.—WHITLA, in the *Practitioner* for April, 1888, describes an ointment of conium and his mode of use as follows:

Two ounces of the pharmacopœial juice are placed in a small evaporating dish, and permitted to evaporate slowly at a heat under 150° F. till the bulk is reduced to about one and a half or two drachms. This can be done by placing the dish on the top of an ordinary domestic hot-water cistern for twenty-four or forty-eight hours. The syrupy liquid is then carefully triturated with as much lanolin as will make the weight up to one ounce; the result is a perfectly smooth adhesive ointment of a light brown or dark fawn color and stable.

Happening to have several rectal cases in which severe pain and torturing pruritus were prominent features the ointment was carefully applied. One was a case of multiple small fissures accompanied with intolerable itching; another was associated with severe tenesmus and excoriations from the pus flowing from an iliac abscess bursting through the *levator ani* muscle and penetrating the rectal walls; another was complicated by a bleeding villous growth. These with two cases of hemorrhoids, one of which had an ulcerated surface, were so markedly and speedily relieved by the conium ointment after nearly every known remedy had failed, that I was surprised at the result.

In a considerable number of cases during the last year the same highly gratifying success was achieved by this remedy, whilst I cannot recollect a single instance where the ointment caused inconvenience. It should be freely smeared *inside* the sphincter, and owing to its adhesive quality can be carried a considerable distance up the rectum by the introduction of the forefinger of the patient.

I have never noticed after its use the serious drawback which follows the prolonged application of every other greasy application to this region, namely a tender, sodden, or raw state of the skin about the margin of the anus.*

The ointment appears to me to paralyze the endings of the *motor* nerves distributed to the fine muscular layer under the surface of the mucous membrane; the reflex twitchings of this layer keep up the perpetual pain and uneasiness in diseases of the rectum and anus associated with abrasions, ulcerations, or fissures.

At the same time it undoubtedly paralyzes the sensory filaments. I have obtained relief from its use in vagin-

ismus and some painful conditions of the male urethra, and find it a good lubricant for the sound or catheter.

To the ointment prepared according to the above formula there may be added ten or twelve grains of the persulphate of iron as recommended by Mr. Cripps in fissure. From carefully watching the results of this combination of conium with iron I am certain that it should have a trial before resorting to the knife or cautery. I have seen a fissure heal completely under its use. In acute inflammation of hemorrhoidal growths associated with swelling and painful throbbing some relief may be obtained by the free application of the conium ointment without iron, but it is in those exquisitely painful fissures or conditions where there is a loss of substance in the mucous surface that this remedy will be found to give more relief than any other drug.

Ichthyol Collodion in the Treatment of Erysipelas.—BILIEFF, in the *Revue de Thérapeutique* of April 1, 1888, gives the following formula:

Collodion	15 parts.
Ether,	
Ichthyol	aa 1 part.

For local application.

Chloroform Narcosis and its Treatment.—The *Medical Press* of April 4, 1888, writes as follows on this topic:

It is doubtless a highly inexpedient thing for a medical practitioner to undertake unaided in a private case the administration of the anæsthetic and the operation, whatever it may be, as well. Everything may prove in the end to be satisfactory, but, on the other hand, it is impossible to foresee accidents, and the slightest untoward occurrence, which, perhaps, in itself unavoidable, may precipitate a catastrophe, and lead to lasting regrets, and be productive of other consequences, in themselves scarcely less pleasant. When, however, the surgeon finds himself in the presence of a difficulty under these circumstances, and in peril of losing his patient from the effects of the chloroform, it will mainly depend upon his coolness and power of resource, whether his efforts to bring back the patient to life will be successful or not.

In illustration of this fact we may mention a case which has recently been brought under our notice: A medical practitioner was asked to circumcise a child, eighteen months old. Being an experienced administrator of anæsthetics, he undertook to act the dual part of chloroformist and operator. He put the infant under chloroform, and then handed the lint which was in use for the purpose to the nurse, to hold under his superintendence. Everything seemed to be so far satisfactory, but as soon as had removed the necessary portion of prepuce, he was astounded to find that the wound did not bleed. Quickly turning his attention to the child, he discovered it to be pulseless, and not breathing. He put in practice at once all the ordinary methods of bringing the patient to life, but without avail; and, at this time, the father of the child, who was in the room, seeing the condition of affairs, added to the difficulty of the situation by rushing madly up and down, lamenting his loss. The surgeon, having directed the parent to go downstairs, set to work anew, by getting the nurse to draw out the patient's tongue as far as possible, then with his fingers grasping the nostrils, he blew with all his force into the

patient's mouth and fully inflated the lungs. This having been done, he compressed the chest, and then inflated again. This process was carried on for some moments, and suddenly the child gave an involuntary gasp. In the course of time, the process being continued, the child began to breathe of itself, and as soon as respiration was properly established, the surgeon completed the operation in the usual way. Such a near escape from what would have been a terrible misfortune, deserves being recorded, and especially on account of the adoption of the means by which the successful result was mainly brought about.

The Action of Antipyrin upon the Heat Centres of the Cerebrum.—GIRARD has experimented upon rabbits by puncturing the corpus striatum, and giving antipyrin for the resulting rise in temperature. His results showed that antipyrin acts directly upon the nervous centres, producing, after such lesions, a considerable fall of temperature.—*Gazette Hebdomadaire*, April 20, 1888.

Borofuchsin, a New Stain for Tubercle Bacilli.—PROFESSOR LUBIMOFF describes in the *Mémoires de l'Académie des Sciences* a new stain for tubercle bacilli, which he calls borofuchsin. It consists of: fuchsin, 8 grains; boric acid, 8 grains; absolute alcohol, $3\frac{1}{4}$ drachms; distilled water, 5 drachms. Prepared thus, it has a slightly acid reaction; it is quite clear and not liable to spoil by being kept, consequently it is always ready for use. The sputum is dried on a cover glass, and stained by being heated in contact with the borofuchsin for one or two minutes. The stain is then washed out by treatment with dilute sulphuric acid. The specimen is then washed with alcohol, and subsequently immersed for half a minute in a saturated alcoholic solution of methylene blue. After being washed in distilled water and dried, the examination of the specimen is made in oil of cedar or in a solution of Canada balsam. In exactly the same way sections of tuberculous organs may be stained after hardening in spirit, only in such cases the steps of the operation must be somewhat more prolonged. The main difference between this and other staining processes for Koch's bacilli is that, when borofuchsin is used, the process of washing it out with sulphuric acid is an almost instantaneous one. All other bacilli are, as when other stains are used, rendered colorless and invisible, the tubercle bacilli being alone seen.—*Lancet*, April 21, 1888.

The Treatment of Violent Colic.—CAPITAN prescribes as follows:

Naphthalin	$\frac{3}{4}$ gr.
Iodoform	$\frac{1}{2}$ gr.
Tannin	$1\frac{1}{2}$ grs.
Antipyrin	$1\frac{1}{2}$ grs.

In pill form: these amounts may be doubled, and the pills taken as needed.—*Revue de Thérapeutique*, April 1, 1888.

Cocaine Poisoning after Injection for Hydrocele.—In the *Vratch*, No. 4, 1888, p. 64, DR. NIKOLAI M. UNKOVSKY, of Moscow, relates the case of a strong man, aged fifty-six, suffering from hydrocele, in whom the hypodermatic injection of two Pravaz syringefuls of a four per cent. solution of hydrochlorate of cocaine was followed in a

few minutes by intense excitement, agonizing pain along the spine (especially in the lumbar region), giddiness, blanching of the skin and mucous membranes, dryness of the mouth and throat, weakness of the pulse and voice, paroxysmal dyspnoea, failure of sight, prostration, and complete inability to move the limbs. The patient's state rapidly growing worse, Dr. Unkovsky resorted to free inhalations of amyl nitrite (recommended as the best antidote to cocaine by Professor W. F. Grube, of Kharkov, and Dr. Schilling—see *Journal*, 1887, vol. i. pp. 695 and 1401), and subcutaneous injections of ether. The symptoms gradually disappeared in about an hour and a half. The total quantity of amyl nitrite inhaled (from a piece of cotton-wool) in the course of an hour amounted to nearly 15 minims, while three syringefuls of ether were injected. The operation for hydrocele (injections of a four per cent. carbolic solution, etc.) was absolutely painless. Dr. Unkovsky also saw a case in which mental disturbance occurred an hour after the injection of half a syringeful of a twenty per cent. solution of the alkaloid into the gum. In another patient, an injection of a syringeful of a four per cent. cocaine solution under the skin of the leg gave rise in about six hours to giddiness, suffocation, slowness of the pulse, pallor, and faintness. —*British Medical Journal*, April 7, 1888.

The Treatment of Albuminuric Dyspnoea.—The *Medical Press* states that the administration of two or three drops of nitrite of amyl in a teaspoonful of brandy is said to afford instantaneous and lasting relief in the dyspnoea of albuminuric patients.

The Treatment of Dysmenorrhœa.—GOUBERT prescribes for young girls:

Iodoform	gr. ¼.
Ext. belladonn.	gr. ⅙.
Asafœtidæ	gr. 1½.

In pill form.

Beginning six or eight days before the time of menstruation, six pills should be taken daily.

For adult women he prescribes:

Potass. iodid.	3 1.
Tinct. croci	3 2.
Tinct. belladonn.	3 2.
Syrup. aurant. cort.	ad 3 6.

Dose a tablespoonful morning and evening, in any convenient liquid, for a week preceding menstruation. —*Gazette de Gynécologie*, March 1, 1888.

The Value of Potassium Permanganate as an Emmenagogue. —DR. L'VOFF, writing in a Moscow medical journal on the emmenagogue action of permanganate of potash as described by Drs. Ringer and Murrell in 1883, states that during the four years which have elapsed since the publication of the English physicians' paper he has treated some 200 cases with permanganate. His results are thus summarized in five classes of cases: 1. Thirty-two cases of otherwise healthy girls who suffered from dysmenorrhœa with diminished flux, no assignable cause being made out. Here pills containing permanganate and extract of pulsatilla were ordered for a week or ten days before the period, with excellent results. 2. Seventeen cases where the involution of the uterus after childbirth had been excessive, or where atrophy of the uterus

and the ovaries had occurred during lengthened puerperal affections, especially during parametritis. These patients took the pills regularly for from three to six months. Improvement in the quantity of the flux generally commenced in from four to six weeks in young women, and in from three to four months in older subjects. 3. Sixty-two cases where pelvic peritonitis occurred after labor. Here a good result was obtained in the majority of the cases, but in a few no effect was observed. 4. Sixty-five cases of young married barren women, in whom gonorrhœal gonococci were mostly to be found, and many of whom suffered from affections of the tubes or ovaries. In this group of cases the results obtained from permanganate were not very striking—indeed, in many of them it was useless. 5. Eleven cases of early appearance of the change of life (from thirty-five to forty years of age), an atrophic condition of the uterus being always recognizable. Here the permanganate proved useless. —*Lancet*, March 31, 1888.

Cocaine in Tracheotomy.—LENNOX BROWNE writes to the *British Medical Journal* of April 7, 1888, as follows on this point:

Since the introduction of cocaine, neither I nor my colleagues at the Central London Throat and Ear Hospital have employed chloroform when performing tracheotomy, but have in substitution injected five minims of a ten per cent. solution of cocaine on each side of the immediate region at which the trachea is to be opened. Ten to twelve minutes have been allowed to elapse before commencing an operation, and in the majority of instances pain has not been felt even from the first incision through the skin. Local anæsthesia has been maintained sufficiently long to allow of a careful and leisurely performance of the operation, without, however, encouraging that undue tediousness against which Mr. Christopher Heath has recently spoken so opportunely, as a besetting fault of modern surgeons who operate under chloroform.

My experience with cocaine in tracheotomy would be represented by about forty cases; we have had twenty in the hospital and in my private practice during the last year. I have witnessed its good effect especially in the last fortnight, during which time I have had occasion to perform the operation four times, all the cases being on account of cancer, and occurring in patients aged seventy-five, fifty-eight, seventy-seven, and fifty-four respectively.

Beyond the advantages of cocaine as a local anæsthetic, this remedy so applied has the effect of depriving the part of blood, and thereby diminishing hemorrhage during the operation, whereas with chloroform and ether the contrary effect is often produced. It also quiets the breathing and steadies the larynx in cases in which respiration is seriously hurried. In only one case have I seen any toxic action, and that was at once remedied, when the trachea was opened and a full flow of air admitted into the lungs.

The Injection of Sterilized Air in the Treatment of Phthisis. —At a recent meeting of the Academy of Medicine, of Paris, POTAIN reported a case of phthisis complicated by pneumothorax which had been greatly improved by the injection of sterilized air into the pleural cavity. The pneumothorax was cured, and the tuberculous process seemed checked. —*L'Union Médicale*, April 26, 1888.

THE MEDICAL NEWS.

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OF MEDICAL SCIENCE.

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SATURDAY, MAY 19, 1888.

THE POISONOUS EFFECTS OF PETROLEUM.

THE general and local effects of the action of petroleum have been carefully studied by LEWIN, who took the opportunity while in this country last year to visit the oil regions of Pennsylvania and the refineries at Point Breeze in this city. The results of these observations appear in the current number of Virchow's *Archiv*.

In response to the question, Is petroleum a poison? Lewin has collected seventeen cases in which it was swallowed by mistake, in amounts ranging from two and a half ounces to two pounds. In the majority of cases symptoms followed, either gastrointestinal or cerebral. Among the former were a sense of heat in the mouth and throat, distress in the stomach, and colic; there was never vomiting, but often diarrhoea. Jaundice has been noted, and occasionally painful urination. In the cerebral form of poisoning, the patient complains of headache, dizziness, somnolence, and even loss of consciousness, symptoms closely resembling alcoholic intoxication. In three instances there were convulsions. In several cases the urine is stated to have had a strong odor of petroleum, and even to have had drops of the oil floating on the surface. Experiments made upon animals demonstrated the poisonous action of the heavy oils, but in no instance did the urine either smell of petroleum, or contain it in the free state.

The vapor of the oil does not appear to be in the slightest degree poisonous to plant life in the oil regions, nor are there any evident injurious effects

upon the inhabitants; but, on the other hand, workers at the pumps, and those who clean the large tanks, are often severely affected. Loss of consciousness, cyanosis, staring eyes with contracted pupils, and lowering of the pulse and temperature have been observed. One fatal case has occurred. In the early stage of this condition the workers may be very excited, and in high spirits, so that at times force must be used to remove them from their dangerous position. These symptoms are probably due to benzine; the asphyxia, doubtless, to the deficiency of oxygen. Instances have occurred in which symptoms of intoxication have followed the spilling of petroleum in a room.

That workers in petroleum are very liable to boils and acne was observed long ago in the Crimean, the Caucasian, and the Roumanian oil regions, and a similar observation on the subject was made by Harrison Allen in this country more than twenty years ago. The most interesting part of Lewin's paper relates to this condition in the workers at Washington, Pa., and at the Point Breeze refinery. The affection is in reality a disseminated acne, in all stages of progressive and regressive change, distributed chiefly on the extensor and flexor surfaces of the arms and thighs. The trunk is less involved, and the genitals are not affected. The cases occur both at the wells and in the refineries; persons of all ages are attacked, the essential condition being direct contact for some time with the crude oil. Some individuals are exempt, and careful attention to cleanliness lessens the susceptibility. At the refinery the workers in the light oils escape, but those are attacked who work in the heavy oils and residue. It is an affection of the sebaceous glands and hair follicles, due to the direct imbibition of the petroleum, and runs a protracted course, yielding slowly to remedial measures so long as the patient remains exposed to the action of the oil.

At a recent meeting of the College of Physicians, Dr. S. Weir Mitchell showed for Dr. J. K. Mitchell a very typical case of the disease in a Point Breeze worker.

SUDDEN DEATH IN PLEURISY AND ASCITES.

ALTHOUGH the experiments of Lichtenstern throw doubt on the truthfulness of the view, many clinicians still hold with Bartel that the most probable cause of this untoward accident is nipping of the inferior vena cava as it enters the heart, a condition which Fränzel is said to have confirmed by autopsy

in three cases. In Virchow's *Archiv*, Bd. cxi., Heft 3, HAGEN-TORN reports two cases in support of the theory which Lichtenstern has so ably advanced, that the danger arises from an increase of the negative pressure within the thorax, and the consequent engorgement of the right heart and normal lung. In the first case, a woman with cirrhosis and ascites, alarming symptoms followed the removal of seventeen quarts of fluid. The bandage became loose, and serious collapse immediately supervened. Pressure on the epigastrium gave relief; a cushion was at once placed beneath the bandage, and the patient revived in a few minutes. In the second case, chronic empyema with great depression of the diaphragm, difficulty of breathing, and failure of the heart came on during the removal of the fluid. These symptoms disappeared when the diaphragm was supported by means of a pad of cotton-wool bandaged on the abdomen. The condition is one of insufficiency of the diaphragm, and the practical measure resorted to in these cases is worth noting. In the great majority of cases of sudden death in pleurisy no cause has been found at the autopsy; in a few instances, thrombi have existed in the right heart and veins, and in a still smaller number other causes of death, such as abscess of the brain, have been found. Heart failure in consequence of altered conditions of pressure within the chest, certainly seems the most reasonable view to take of these cases.

PREVENTIVE INOCULATION.

In previous numbers of THE NEWS we have called attention to experiments in preventive inoculation by means of sterilized cultures of pathogenic bacteria, especially to experiments in typhoid fever by Beumer and Peiper, and by Chantemesse and Widal. The latter, in the paper cited, had endeavored to depreciate the value of certain experiments of Salmon and Smith, but as it was foreign to the topic then considered, we made no allusions to that attack. In a recent sitting of the Académie des Sciences, Pasteur, in characteristic language, claimed for his own laboratory priority in the discovery of such inoculations. This has called forth a rejoinder from Hueppe, who gives in the last *Fortschritte der Medicin*, a sketch of the development of our knowledge of the action of bacteria through soluble chemical substances—ptomaines or toxines—and of the efforts made to secure immunity by inoculations of these substances.

Hueppe shows clearly that the first successful ex-

periments of this kind were made by D. E. Salmon and Theobald Smith, of Washington, in the spring of 1886, the virus used being that of hog-cholera (*Proc. of Biological Society of Washington*, viii., Feb. 22, 1886). That the American investigators were fully aware of the immense practical bearing of their results is shown by the quotations by Hueppe, and the latter was so impressed by the facts adduced that he used them in illustration of his remarks before the "Naturforscher-Versammlung" in 1887, on the "genesis of pathogenic action."

Though the full value of these experiments cannot yet be realized, we consider them as marking one of the greatest advances in bacteriology, and destined to do the same for medicine, and it cannot be other than a matter of pride that American investigators have taken such a prominent part in the work, and that the credit, which is their due, is publicly conceded to them by one of the most eminent living authorities in bacteriology.

SMALLPOX has been impartially strewed on both sides of the Atlantic by that pestiferous steamer, the "Circassia." One of the latest cases to come to light is that of a Scottish immigrant, who arrived at New York early in March, and thence found his way to Goldsboro, North Carolina. He states that there was a case of the disease on shipboard that died. They were detained at quarantine only about nine hours; all on board were vaccinated, and were then "let loose on the country," as Dr. M. E. Robinson expresses himself, in his report of the case, dated April 21, in the last *Bulletin of the North Carolina State Board of Health*. At that date, the patient had nearly recovered. Prompt and thorough measures for the prevention of the spread of the pest were employed at Goldsboro, and no second case has arisen. Five of the crew of the "Circassia" were taken down with the disease on the return voyage.

At the recent Congress of German Surgeons von Bergmann announced a plan for the erection, in a central location in Berlin, of a memorial building to von Langenbeck. The building is to contain an auditorium seating 700 or 800 persons, and accommodations for a large library. The building will cost about \$100,000, half of which is pledged by individuals or by the Society; the rest will be raised by a loan on the building. The German Society for Surgery will be the virtual possessor of the building,

but the Berlin Medical Society will also make its headquarters there. A committee composed of von Bergmann, Bardeleben, Hahn, and Langenbuch, was appointed to further the plan.

THERE have been a number of deaths by electricity within the past month, chiefly in consequence of defective management of the wires used in electrical lighting. The powerful current carried along the wires that are strung overhead in nearly all our cities requires a completeness of insulation that taxes severely the ingenuity of experts. Much of the danger will be obviated by compelling the companies that supply the lights to run their street wires in underground conduits, as is done in Europe. Fatal accidents are comparatively infrequent in foreign cities, but it is said of the underground system that "it has hindered the development of electrical interests" in London and elsewhere.

In the case of a death recently occurring in New York City, the verdict of the Coroner's jury found that one of the illuminating companies was chargeable with the death, and that the overhead system is a standing menace to health and life, and that it is the duty of the authorities to take immediate steps to have the wires conducted underground. The interests of the public health and safety far outweigh the interests of the corporations; and as the Coroner said on the occasion of this inquest, "it matters not how difficult or expensive it may be to meet the dangers incident to electrical illumination, it must be done; public health and life must be protected."

A NEW ophthalmic hospital is projected in New York City, to be known as the New Amsterdam Eye and Ear Dispensary. It will have for its chief medical officer Dr. Thomas R. Pooley, who for fifteen years has been the colleague of Dr. Herman Knapp, at the New York Institute. If this project shall prove a success, it will make the fourth of the kind in that city, and the ground pertaining to this specialty will have been very thoroughly covered. In the three institutions now in successful operation there are treated annually over thirty thousand cases, and at a cost of not less than fifty thousand dollars. There will be associated with Dr. Pooley as medical staff Drs. L. Bolton Bangs, J. W. Barstow, and C. S. Ward.

THE Thirty-ninth Annual Session of the Medical Society of the State of Pennsylvania will be held in

Philadelphia, on June 5th, 6th, 7th, and 8th, at Association Hall, Fifteenth and Chestnut Streets, under the Presidency of Dr. R. J. Levis, of Philadelphia.

A CREMATION SOCIETY has been recently organized in Chicago, and a stock company will be formed, and a crematory erected as soon as possible.

THE College of Physicians and Surgeons of New York graduated a class of 120 at its recent Commencement.

THE College of State Medicine was incorporated in London in 1887, and is presided over by Sir Joseph Fayrer. The course of lectures during the summer session will be given in rooms of the Chemical Society, Burlington House. Among the lecturers will be Professors Klein, Fleming, Fayrer, Brudenell Carter, Seely, and Sir Robert Rawlinson. The regular professor of hygiene and public health is Dr. Wm. Robert Smith. The Public Health Laboratory connected with the College will be open throughout the session, which opens early in May.

DR. C. S. MUSCROFT, of Cincinnati, died at his home on May 8, 1888. He was a surgeon of large experience and wide culture, and had been for many years a member of the staffs of St. Mary's and the Cincinnati Hospitals.

SOCIETY PROCEEDINGS.

AMERICAN MEDICAL ASSOCIATION.

Thirty-ninth Annual Meeting, held at Cincinnati, May 8, 9, 10, and 11, 1888.

(Specially reported for THE MEDICAL NEWS.)

GENERAL SESSION.

FRIDAY, MAY 11TH.—FOURTH DAY.

The Association was called to order by the President at 10.30 A.M.

DR. H. P. WALCOTT, of Boston, delivered

THE ADDRESS IN STATE MEDICINE.

(See THE MEDICAL NEWS of May 12th, page 510.)

DR. N. S. DAVIS then presented the

REPORT OF THE COMMITTEE ON METEOROLOGICAL CONDITIONS.

It embodied: 1. A summary of facts gathered concerning all appreciable meteorological conditions coincidentally observed and recorded in different parts of the country. 2. The efforts made to determine how far these facts show any constant relation of one series of facts to

another. 3. A summary concerning the prevalence of a number of the acute general diseases, more particularly typhoid fever. 4. Critical examination instituted to determine what uniform coincidence, if any, can be traced between the more immediate meteorological conditions and the prevalence of disease.

The following questions were propounded: 1. Is it probable that the free albuminate of ammonia when existing in the atmosphere, compared with the amount of ozone and hydrogen protoxide, can constitute the pabulum for the rapid development of either pathogenic germs or ptomaines, and thereby afford an explanation of the apparently simultaneous attacks of some epidemic diseases in several persons in the same city or district, yet without any other traceable connection with each other? 2. Do the well-established facts attending the development or propagation of typhoid fever and cholera justify the inference that the specific causes acquire active propagating pathogenic forces only exterior to the body, and in connection with soil water? 3. May such specific causes continue to propagate and retain their pathogenic force indefinitely exterior to the body, or do they pass one stage of development in the body and another exterior to it?

On motion, the Committee was continued.

DR. I. N. QUIMBY, of Jersey City, presented the report of the special committee on

THE CRIMINALITY OF FETICIDE, AND EFFORTS FOR ITS PREVENTION.

Objections to the report were raised by several members, and it was finally tabled. Subsequently, however, on motion of Dr. I. N. Love, of St. Louis, it was taken from the table and referred to the Section on State Medicine.

DR. H. O. MARCY, of Boston, presented a report of the special committee on

THE DUTIES COMMONLY EXERCISED BY CORONERS, which was adopted as read.

On motion a resolution was adopted urging upon Congress the importance of the immediate passage of Senate Bill No. 2493 to perfect

THE QUARANTINE SERVICE OF THE UNITED STATES,

which bill has passed the Senate and is now pending the action of the House of Representatives, in order to make provision against the introduction of contagious diseases before the approaching summer.

A motion was made and carried to take from the table the amendment proposed to the by-laws of the Association at the last meeting by Dr. Carl Seiler, of Philadelphia, providing for the

DIVISION OF THE SECTION ON OPHTHALMOLOGY, OTOTOLOGY, AND LARYNGOLOGY,

so as to make one section on ophthalmology, and another on otology and laryngology. The amendment was adopted.

HIGHER MEDICAL EDUCATION.

DR. I. N. QUIMBY presented a resolution recommending the appointment of a committee, to consist of one member from each State, whose duty it shall be to devise the best means to secure adequate legislation to provide for the examination of the charters of colleges, and provide for higher medical education.

The motion was tabled.

400TH ANNIVERSARY OF THE DISCOVERY OF AMERICA.

The following resolution was adopted:

Resolved, That the American Medical Association approves the movement looking to the celebration in Washington, in 1892, of the 400th anniversary of the discovery of America by Columbus, and the establishment there of a museum of arts, industries, and antiquities of the three Americas; and the Association hereby requests Congress to pass the necessary legislation preparatory to this end. Carried.

The Secretary then read the reports of work done by the various Sections, as transmitted by the several secretaries.

The following members were appointed

DELEGATES TO FOREIGN MEDICAL SOCIETIES:

R. A. Plummer, M.D., of San Francisco; H. A. Kelly, M.D., of Philadelphia; N. S. Davis, M.D., of Chicago; W. H. Myers, M.D., of Fort Wayne, Indiana; A. E. Hoadly, M.D., of Chicago; I. E. Waxham, M.D., of Chicago; Alex. McAllister, M.D., of Camden, N. J.; J. J. Chisholm, M.D., of Baltimore; D. A. K. Steele, M.D., of Chicago; J. V. Shoemaker, M.D., of Philadelphia; S. J. Jones, M.D., of Chicago; J. E. Owens, M.D., of Chicago; Ephraim Cutter, M.D., of New York; L. A. Sayre, M.D., of New York; V. C. Vaughan, M.D., of Ann Arbor, Michigan.

THANKS.

The following resolution was adopted:

Resolved, That the heartfelt acknowledgment of this meeting be tendered to the physicians of this city, to the Apollo Club, and to all who have contributed toward the great success of the session, and especially are our thanks due, and we take pleasure in this manner to express them, to the fair coterie of ladies who have given brilliancy to the social entertainments by their charming presence. They are the best jewels in the crown of this metropolis, which is destined to be the Queen City of the East as well as of the West.

The Association then adjourned to meet in Newport, R. I., on the first Tuesday in June, 1889.

SECTIONS.

OBSTETRICS.

TUESDAY, MAY 8TH.

DR. ELY VAN DE WARKER, of Syracuse, opened the meeting with some remarks on

HOW GYNECOLOGY IS TAUGHT.

In which he dwelt upon the imperfect way in which this branch is taught in the colleges of the United States. The introduction of the graded system, with its methods of text-book study is the adoption of a method already discarded by progressive educators. It is a method detrimental to both student and teacher. Of 109 medical colleges in the United States, and only those are selected which are approved by the Illinois Board of Health—in only 56 is the subject announced in their catalogues as taught. In 14 the chairs of the diseases of women and children are united. In 32 there are professors or lecturers on gynecology. In 10 no mention is made of the subject. One announces 44 lectures on gynecology. In

66 of the 100 diseases of women are taught by the professor of obstetrics or not at all.

DR. JOSEPH PRICE, of Philadelphia, next presented a brief paper upon

THE SYSTEM OF VISITING NURSES AS ORGANIZED IN PHILADELPHIA.

DR. W. W. JAGGARD, of Chicago, then presented a

NOTE ON THE OCCASIONAL RELATION OF ENDOMETRITIS GRAVIDARUM TO THE PERNICIOUS VOMITING OF PREGNANCY.

He reported a case with a careful analysis, calling attention to the occurrence of these cases, with a plea for more careful diagnosis, (1) as to the existence of pregnancy, (2) as to the factor causing the vomiting, (3) as to the causes of vomiting independent of the vomiting. To the care taken in making the diagnosis he attributes the infrequency of cases of pernicious vomiting reported in German literature as compared with French and American. In the case reported all remedies for checking the vomiting, including dilatation of the cervix, were unavailing, and the patient's condition becoming critical abortion was induced at the fifth month. Examination of the membranes showed pathological conditions identical with Herger's description of the conditions in hydromenorrhea gravidarum. Cessation of nausea and vomiting immediately followed the abortion and the patient made a good recovery.

DR. DELASKIE MILLER said these cases are not infrequently met with in practice, and he was glad attention had been drawn to the subject. The plan of delaying too long the induction of abortion, too often resulted in the death of the mother. Since having departed from this rule he has obtained better results.

DR. NELSON, of Chicago, stated that in his experience the pernicious vomiting is usually associated with displacements of uterus or appendages.

DR. MARCY, of Boston, referred to the views of Ercolani as to placental development. These cases are not cases of inflammation of the decidua, but the secretory and absorptive organs of the placenta are not in proper relation, there is a lack of proper placental development.

In the cases of vomiting due to this cause, it is useless to trust to medication, and abortion should be induced early, since there is certain to be one of two results if they are let alone—the death of the fetus and its spontaneous extrusion, or the death of both mother and fetus.

DR. WM. GOODELL, of Philadelphia, then read a paper upon

NEUROSES OF THE RECTUM.

In hysterical affections of the muscles, the circular muscles—sphincters—are most liable to be attacked. Rectal neuroses are not infrequent. There are usually present some of the symptoms of general nervous prostration; but often the rectal trouble is the chief symptom, and so prominent that the physician is led to believe some grave affection of the part is present. There will, however, be noticed an irregularity in the pain; an affection of suffering; a lack of consistency in the symptoms. One class of cases closely simulates the symptoms of fissure. In another, a throbbing pain when the bowel becomes loaded, and a burning pain in defecation are present.

These cases are often cured by over-stretching the sphincter. Disease of the coccyx must be carefully excluded. Sometimes stricture is so completely counterfeited that the feces are passed in ribbons or pellets. In some cases, defecation is followed by great exhaustion. Cases were cited showing the strange pranks played by the hysterical rectum.

Another class of cases are those known as follicular enteritis. He has found these cases always to be hypochondriacal or hysterical. In the treatment the general nervous prostration must first be cured by the Weir Mitchell plan of treatment. When the evacuations are followed by great exhaustion, it is important to secure a passage at bedtime. Suppositories of iodoform or antipyrin may be used as in fissure, or over-stretching may be resorted to, and repeated if there is a relapse. In follicular enteritis he has found injections of broths, flaxseed tea, witch-hazel, undiluted lime water, etc., useful; opium is to be avoided. The compound sumbul pill he has found of advantage. The bromides are often needed. When patients are so situated that the Weir Mitchell treatment cannot be employed, an hour or two of absolute rest daily in bed, in a darkened room, should be insisted upon.

DR. GORDON, of Boston, spoke on

HYSTERECTOMY FOR CANCER.

Cancer of the uterus should not be an exception to the surgical rule now generally adopted, to remove as soon as possible. He reported three cases with one death, two are living and doing well.

DR. GOODELL expressed himself as "on the fence," being yet undecided, from the number of cases reported, and the length of time elapsed after operation, as to the justifiability of the operation. He had operated twice, one died from septicaemia; the other lived six months, and died from recurrence.

DR. CUSHING, of Boston, had seen the operation so successful in Berlin that he favored it.

DR. HOWARD A. KELLY, of Philadelphia, considered that there was no question as to the legitimacy of the operation.

WEDNESDAY, MAY 9TH.

DR. L. H. DUNNING, of South Bend, Indiana, read an exhaustive paper upon

DOUBLE UTERUS AND VAGINA.

After reporting an interesting case, he gave an analysis of 97 cases whose histories he had collected. In the 97, there were

Uterus bipartitus	7 cases.
" unicornis	3 "
" bicornis	52 "
" bilocularis	23 "
" single, neck and vagina double	2 "
Not clearly stated	10 "
Atresia of vagina	6 "

Of the 97, 47 were married, 3 unmarried bore children, making 50 mothers.

No. women pregnant	42
" of pregnancies	76
" " natural labors	42
" " difficult labors	13

Means of relief in these:

Forceps in	7
Turning	1
Septum cut	4
Rupture of uterus	1

Of the 42 pregnant women, 14 miscarried eighteen times. 23.6 per cent. of pregnancies resulted in abortion or miscarriage. No instance of a pregnant uterus bipartitus is found in the 97.

There were—pregnancies in

Uterus unicornis	3
“ bicornis	21
“ bilocularis	12
Single uterus with double vagina	4
Unknown form	2

He concludes that the malformation is more common than generally supposed.

DR. W. H. TAYLOR, of Cincinnati, reported two cases which had occurred in his practice.

DR. HOWARD A. KELLY, of Philadelphia, mentioned several cases which he had seen, and stated that he believed the malformation to be more common than is usually stated.

DR. GOODELL reported a case in which diagnosis of extrauterine pregnancy was made and a contemplated operation only avoided by the timely discovery of the mistake.

DR. FRANKLIN H. MARTIN, of Chicago, read a paper upon

THE VALUE OF GALVANISM, AS APPLIED BY APOSTOLI IN THE TREATMENT OF FIBROID TUMORS OF THE UTERUS.

1. A means of generating a continuous current of electricity of steady and uniform character, that can give an actual current strength through a resistance of two hundred ohms, of 500 milliamperes, is necessary in order to obtain all the benefits of this treatment.

2. Fibroid tumors of small size can be completely absorbed by the proper application of strong currents of galvanism.

3. Hemorrhages from hemorrhagic fibroid tumors can be promptly cured by the local coagulating effect of the positive pole by intrauterine application. Severe neuralgias, so often accompanying these troubles, can invariably be relieved by three or four applications of this treatment.

4. When the cervical canal cannot be entered by any form of intrauterine electrode, flexible or otherwise, after repeated trials, a negative galvano-puncture should be made into the presenting part of the obstructing mass of the tumor and an artificial canal opened, which is to take the place of the impenetrable uterine canal in all subsequent treatments.

5. The intrauterine electrode should in all cases be negative, unless there is hemorrhage or excessive leucorrhœa, when the positive pole is always required. The same patient may, however, present symptoms demanding the use of both poles at successive operations.

6. The strength of the current should depend entirely upon the amount of active surface of the internal electrode, and should be twenty-five milliamperes for each square centimetre of active surface in actual contact with the endometrium. If more is used, the concen-

tration of the current will be sufficient to cause troublesome cauterization; if less is used, the concentration at any one point will not be sufficient to cause the necessary coagulation for checking hemorrhage.

7. The duration of the treatment should be five minutes of the maximum current required.

8. The number of operations is necessarily dependent upon and influenced by the result to be accomplished. A severe hemorrhage can be checked, and symptomatic relief can often be accomplished by four or five sésances, while a general reduction of the tumor necessitates many operations, varied, of course, according to the size and location. In some cases of large multiple tumors a relief of symptoms, or symptomatic cures, must be accepted as a substitute for an actual cure.

9. The operation should be intermenstrual, if possible; if hemorrhage is continuous, however, operate during flow. The sésances can occur as often as every day, with the system of concentration adopted that enables one to attack different portions of the canal at succeeding treatments, or treatment can be given with advantage as seldom as once a week.

10. Since the adoption of the flexible intrauterine electrodes and Dr. Apostoli's vaginal galvano-puncture, extrauterine puncture should be regarded, if at all, only as a last resort.

11. Galvano-puncture needles and the internal electrodes, should be constructed of material that is not injured by coming in contact with strong carbolic acid, or 1:1000 bichloride of mercury solution. All internal electrodes should be thoroughly scrubbed with a nail brush and soap and water after each application, and allowed to remain in one or the other of these standard antiseptic solutions until they are to be employed again, when they should be washed in a weaker solution of the same before using. Before a vaginal puncture is made, the vagina should be thoroughly wiped out with a 1 to 3000 bichloride solution.

12. There is no excuse for any percentage of mortality in the proper application of this treatment. While Dr. Apostoli has had two deaths in 275 cases, he candidly admits they were due to avoidable accidents, rather than to any legitimate result of the operation.

13. In experienced hands, and by the adoption of the present means of concentration, the most delicate and sensitive patient can receive, without experiencing any severe discomfort, all the benefits to be derived from this valuable treatment.

THURSDAY, MAY 10TH.

DR. WATHEN, of Louisville, read a paper upon

ABDOMINAL SECTION IN EXTRAUTERINE PREGNANCY,

in which he favored operation as soon as the diagnosis could be made. In most cases the sac can be removed, and hemorrhage controlled, by proper application of ligatures. The objection to operation on the ground of the difficulty of separating the sac, is more theoretical than practical. If it cannot be removed, it may be left.

DR. A. W. JOHNSTON, of Danville, Ky., followed with a paper upon the same subject. He claimed that the treatment by electricity at any period was wrong in principle, dangerous in practice, and disastrous in its results, and that it would soon be entirely discarded by the profession. To destroy the life of the fetus is not sufficient,

the growth of the placenta must also be stopped. To do this requires such a shock to the pelvic nervous supply as to be dangerous. It is now established that the early cramping pains, attended with prostration of the patient, are really due to slight ruptures of the tube. When electricity succeeds in destroying the life of the fetus, and checking the growth of the placenta, the danger is not over, the mother is still liable to septic infection from the remaining mass; and the subsequent history of these cases is often one of chronic invalidism. Operation should be made as soon as the condition is discovered.

DR. RUFUS B. HALL, of Cincinnati, made

A PLEA FOR EARLY OPERATIVE INTERFERENCE IN CASES OF OBSCURE PELVIC PAIN.

It is now known that recurrent attacks of pelvic peritonitis are very often due to disease of the Fallopian tubes. He would recommend the operation before the patient's general condition is too bad for recovery, and after careful treatment by other means had failed. By operation very many cases, doomed otherwise to life-long invalidism or to death, may be saved. By modern methods and in experienced hands the mortality from operation is not more than from two to six per cent. He cited Lawson Tait's experience, and the intense opposition he had encountered. The general profession being opposed to operation allow these cases to die which ought to be relieved by operation. He reported one case, which having refused operative interference, died under "expectant" treatment, and two cases in which removal of the tubes and ovaries was followed by complete relief, and the restoration of the patients to complete health.

DR. C. R. REED, of Middleport, Ohio, read a paper upon

THE EARLY REMOVAL OF ABDOMINAL CYSTIC TUMORS.

He condemned tapping, and favored the removal of the growths as early as possible.

DR. MARCY, of Boston, presented a paper upon

EXPLORATORY LAPAROTOMY.

He advocated the more frequent resort to the operation in obscure cases, and reported illustrative cases from his own practice.

DR. WM. H. MYERS, of Fort Wayne, Ind., next read a paper on

TREATMENT OF ACUTE PERITONITIS.

The old plan of treatment by opium should be abandoned. The best results are to be obtained by the early and free use of saline cathartics. Peritonitis is never idiopathic. Its treatment belongs to the surgeon rather than the physician. Antiseptic precautions and drainage were prophylactics to be employed in operations. Patients should not be allowed to die of peritonitis without the benefits of operation. Free irrigation was commended.

DR. GOODELL opened the discussion upon the papers read by stating that in the main the views expressed were in accord with his own; yet some of them were rather too sweeping. He agreed with Dr. Meyers that free purgation should be employed at the beginning of an attack of peritonitis; uses opium as little as possible, but in cases attended by severe pain it would be cruel to

withhold it. He would not remove a small stationary ovarian growth which was giving no trouble, and such cases he had had under observation for years.

DR. HALL's paper he thought too sweeping. Many cases may be cured by the Weir Mitchell plan of treatment, and without operation. If the truth were known, a larger per cent. of cases operated upon die than has been stated.

DR. ROBERT BATTEY wished to make some corrections as to history in the paper of Dr. Hall. Lawson Tait says that he does not operate with the design of producing the change of life, but he removes ovaries and tubes to cure pain as the dentist pulls an aching tooth. An American surgeon, as long ago as 1872, did operate with this object—*i. e.*, to produce the change of life—distinctly in view.

DR. HALL had referred to Tait's great opposition from the profession in England, but the fight on this question was all over in this country before Tait's voice had ever been heard on the subject. It was not until seven years after the first operation in this country that Tait made a claim to have operated in a case one month earlier than Battey. In 1879 he came forward and stated that in a private conversation with Dr. Chadwick, of Boston, he had told of this operation. Dr. Chadwick has no recollection of such a conversation. Why did he remain silent for these seven long years, while the warfare was going on in this country? Why had he made no mention of the subject in his book on the ovaries published in the meantime? "When the fox-chase was all over he came forward and wanted to cut off the fox's tail."

DR. HOWARD A. KELLY stated that a large portion of the profession were ignorant of the truth in regard to Dr. Battey's claim to priority, that he himself was for a long time; but having investigated the subject he had found that Dr. Battey was undoubtedly entitled to the credit of having originated it.

DR. HALL, in reply to Dr. Battey, stated that his paper was not concerned with the question of the priority of the claimants to oöphorectomy.

Adjourned.

MEDICINE.

TUESDAY, MAY 8TH.

DR. N. S. DAVIS, of Chicago, opened the meeting by announcing the death of Dr. A. B. Palmer, of Ann Arbor, the Chairman-elect, and the unavoidable absence of the Secretary, Dr. N. S. Davis, Jr., of Chicago. An election of officers was then held with the following result:

Chairman.—Dr. W. C. Van Bibber of Baltimore.

Secretary.—Dr. G. A. Fackler, of Cincinnati.

DR. VAN BIBBER opened the discussion

ON PNEUMONIA, ITS ETIOLOGY, PATHOLOGY, AND TREATMENT,

with a consideration of the mechanism of pneumonia and its treatment. His remarks covered two points: 1st, an inquiry into the initial causes of pneumonia; and secondly, the treatment of pneumonia.

He recognized among the predisposing causes of pneumonia four, which are quite different from each other, and each one of them must produce the same effect, viz., congestion in the capillaries, by a different mode of action. The causes are age, cold, malaria, and alcohol. He stated the following conclusions: The predisposing

causes, as the name implies, do not produce pneumonia, *de ipso facto*, but they have already worked such structural changes in the body that upon further disturbance of the system a congestion of the numerous pulmonary capillaries is more likely to occur than any other diseased condition.

A study of these structural changes, brought about by the predisposing causes, gives advantages, both in advisory prophylaxis, as well as in treatment.

He introduced the discussion of the treatment of pneumonia with the statement from Fothergill, that "every new remedy almost is tried in turn in pneumonia. It is a disease particularly suitable to speculative medicine." He had determined to present the subject by means of four hypothetical cases: one a child of eighteen months, one a youth of twenty-five years, one sixty-five years of age, complicated with malaria, and one case seventy years old, complicated with old age, malaria, and alcohol. In the discussion of these cases much stress is laid on cupping over the roots of the lungs, between the shoulders, or, more particularly still, between the third and eighth dorsal vertebrae, in order that by the laws of counter-irritation over affected parts, the circulation through the roots of the lungs may be kept entirely free and open. It is also a means of controlling, or, at least, of moderating, the effects of high arterial action during fever. It is valuable for the relief of pain and oppression it affords.

The medicines recommended are five in number: muriate and carbonate of ammonium, the former acting upon the circulation in the capillaries, assisting to unload them when they become engorged, as a resolvent, a general expectorant, and a diaphoretic; the latter as a stimulant, a resolvent, as a remedy which prevents the coagulating or engorging of blood in the capillaries. It may also be used as a vehicle in inhalations. Antipyrin and antifebrin seem to control the fever, by diminishing the heat of the blood. Digitalis, veratrum viride, strychnia, strophanthus, and other remedies, are valuable.

DR. J. T. WHITTAKER, of Cincinnati, said that it is no exaggeration to say that the past two years have been more eventful in the history of pneumonia than any period in the past two thousand, for in this short space of time pneumonia, a disease which causes 6.6 per cent. of the total mortality, and 12.7 per cent. of the mortality of internal affections, has been definitely placed among the acute infections.

Pneumonia is now known to be an acute infection with the symptoms, course, and lesions characteristic of this class of diseases. With this knowledge came the correction of many errors which like the envelopes of a veiled statue obscured the figure so that only its rough outlines could be seen. The first intimation in this direction came from a recognition of the fact that pneumonia sometimes assumes epidemic proportions, but the death-blow came to the old conception of the nature of the disease in the establishment of the fact that it does not result from taking cold. Over 80 per cent. of cases can recall no possible exposure to cold in explanation of the origin of the disease. Another error perpetuated from time immemorial, that pneumonia picks by preference upon the healthy and robust, was corrected in the observation that the disease has a predilection for enfeebled conditions. Dietl declares that but 18 per cent. of cases were previously healthy. The subjects of rickets, tuber-

culosis, syphilis, alcoholism, malaria, anæmia, previous infections, etc., furnish the victims of pneumonia. Then it was discovered that while wounds may cause an inflammation of the lungs they can in no way produce a croupous pneumonia. Not the out-door but the in-door life is especially liable to attack. Soldiers are attacked in garrison and barracks, not in active campaign. Sailors who are exposed to the cruelest inclemencies and vicissitudes of weather are almost never attacked on the open sea, and but rarely, though more frequently, when near shore. 17.02 is the appalling percentage of deaths among the nuns in Paris, while that of washerwomen is but 3 per cent. Among 674 individuals engaged in unloading vessels, standing often waist-deep in water, Parent du-Chantillet found but one case of congestion of the lungs. On the other hand, prisons, factories, and tenement-houses furnish a large contingent of cases of this disease. The proportion of cases in cities to country is as 5 : 2.

But while it is acknowledged that cold and trauma are not the real causes of the disease, it may be admitted that they do, in exceptional cases, act as exciting agents where the cause preëxists in the body, just as injury to the brain and spine may excite abscess of the brain or caries of the spine, or measles excite tuberculosis.

It was the observation of these facts that gradually led advanced thinkers in clinical medicine, notably Oppolzer, of Vienna, and Andrew Clark, of London, to the belief that pneumonia was not the type of the acute inflammations produced by cold, but was probably due to some peculiar condition of the atmosphere. It was reserved, however, for Juergensen, of Kiel, in 1872, to formulate this view more precisely in the declaration, as the result of his observations, that pneumonia was an infection, and thus to stimulate the bacteriologists to discover its cause. Juergensen saw, 1, that the disease had different temporal and causal relations from the affection commonly ascribed to cold; 2, that the general symptoms,—fever, nervous symptoms, prostration—by no means always correspond with the extent of invasion of the lung; 3, that the disease runs a typical course with a definite termination in five to nine days; 4, that its lesions and complications on the part of the heart, lungs, kidneys, and spleen were the same as the other infections, and was thus able to declare the character of the affection in the absence of any distinct proof. When this proof should be furnished seemed only a matter of time. Klebs first appeared with his monads found in bronchial secretions, cultivatable in proper soils, and inoculable to produce the disease in rabbits. There is little doubt now that Klebs was able to produce the disease by inoculation but not with pure cultures. Eberth and Koch next each observed ellipsoid micrococci in the lungs, meninges, and blood, though not with sufficient evidence of pathogenic properties. The memorable disclosures of Friedländer, in 1883, of capsule cocci constantly present in the exudation into the lungs, lymph vessels, and pleural effusions furnished the first evidence of satisfactory character that this microorganism could be successfully isolated, cultivated, and inoculated to produce the disease in certain animals. But it was soon seen that Friedländer's microorganism was present in but the smallest contingent of cases, according to the observations of Weichselbaum in but 5.5 per cent. Fränkel next, in 1886, isolated a pneumococcus quite similar to, but not identical with that of Friedländer,

which a number of subsequent observers find present in nearly all the typical cases of the disease. This organism which Weichselbaum distinguishes as a diplococcus with candle-light or lancet-shaped elements, and which seems to be identical with Sternberg's sputum septicaemia bacterium, can be detected in over 90 per cent. of cases. Though often confounded with that of Friedländer, its different manner of growth quite easily distinguishes it, and the great frequency with which it is found gives it, at the present time, supreme importance. Artigas and Pane have each since advanced a special microorganism as the cause of the affection, and Weichselbaum admits that the lesions of pneumonia may be produced by the introduction into the lungs of the streptococcus and staphylococcus of pus. There is reason to believe that the typhoid bacillus may also produce hepatization of the lung.

Thus, there is no poverty of material in the etiology; on the contrary, an *embarrass des richesses*. What are we to conclude from this abundant and apparently conflicting testimony? It is safe to conclude, in the first place, that lobar pneumonia has not yet been finally resolved; that there are various forms of the disease, undistinguishable as yet by physical signs. Clinical medicine has long since separated primary and secondary pneumonia. The pneumonia incident to typhoid fever, scarlatina, smallpox, dysentery, and other infections, shows a character and course quite different from the primary acute croupous disease. That secondary pneumonias may be readily explained by invasions of the lungs with the microorganisms of these diseases, is quite certainly established at least for typhoid fever. Other cases admit of explanation on the ground of mixed infection. Thus, suppuration is not a natural termination of acute croupous pneumonia. Suppuration means a coincident or subsequent invasion of the lungs by the organisms of pus. Omitting all these cases, we have left pneumonia proper, which can certainly be produced by the diplococci of both Friedländer and Fränkel. Whether these pneumonias differ in their character, or what fine differences they present, we know not as yet, but we do know, clinically, that acute croupous pneumonia has a classically typical course. Few other infections, Baumgartner declares, present a course so uniform and so regular. It is, therefore, safe to assume, as in the case of other infections of uniform course, typhoid fever and erysipelas, for instance, a single sole cause in the production of pneumonia. Whether or not this cause has been discovered in Fränkel's microorganism cannot be declared as yet, but the bulk of recent testimony lies certainly in this direction.

Then, to speak only from a clinical standpoint, this organism is most uniformly found in the sputum of perfectly recent cases, or in the first days of the disease, a fact which gives it supreme value from the point of view of differential diagnosis. Thus, in the examination of seventy successive cases, Wolff found Fränkel's diplococcus 66 times—*i. e.*, 94 per cent., and Friedländer's but 3 times—*i. e.*, 4 per cent. The examination was negative in but a single case. Verification was established by cultures in more than half the cases.

The diagnosis of pneumonia is generally easy, but difficulties are often presented in the separation of tuberculosis and pleurisy, and still more frequently in the first days of the disease. Illustrative cases of the value of the pneumococcus in this direction, are reported by Russian

physicians. Thus Ignatieff, of Moscow, details four cases of tuberculosis complicated by pneumonia as recognized by the discovery of both forms of bacteria, and maintains that the presence of the diplococcus renders much more grave the prognosis of tuberculosis. The coincidence of the affections was verified on autopsy. Kotovshchikoff, of Kazan, describes five cases in which the diagnosis of pneumonia could only be made in this way. In two cases a central lesion ran its course without physical signs up to the fifth and seventh day; in the other three the signs were those of pleurisy. Khomiakoff declares that he was able thus to diagnosticate the disease twenty-four hours, and Lubimoff seventy-two hours, before the appearance of any physical signs.

A most interesting clinical contribution was offered in the report of Ampugnani, at the Italian Congress of Physicians, September, 1877. Ampugnani had made hourly observations of the temperature in one hundred cases of pneumonia, revealing the fact that the temperature underwent oscillations of $\frac{3}{4}^{\circ}$ to 1° in successive hours of the same day. These fluctuations, which in extreme cases ranged over three degrees, were characteristic rather of mild cases. Severe cases showed a more continuous and sustained elevation. But the fatal cases were not characterized by the very high temperatures. Death does not occur from fever, but from heart complications.

Now it is known of Fränkel's bacteria that a high temperature attenuates and a higher destroys its virulence. A temperature of 107° destroys virulence in twenty-four to forty-eight hours; of 105° , in four days; and of 103.5° , in seven days. We may not say of it that a high temperature is an effort of nature to destroy the cause of the disease—assuming these bacteria to be the cause—but that it is the nature of certain bacteria to develop in the body a high temperature which is fatal to their virulent properties.

The disease probably enters the body through the avenue of the lungs—diplococci have been found by Emmerich and Uffelman under floors and on the walls of houses—and is always local at first. Subsequent disseminations from the lungs may invade the meninges, endocardium, spleen, and kidneys, favorite localizations of the disease. Thus pneumonia is an acute infection—not in the sense of Juergensen, as a general disease with a local expression in the lungs—but as a local disease which may undergo resolution at any stage, or may become general in its later course.

But aside from all questions of etiology, clinicians had already come to the conclusion that a high temperature in pneumonia is not serious because the duration of the disease is so short. Perhaps we are justified in administering antipyretics only to secure comfort to the patient. The pulse is the main indication of gravity. A pulse over 120 in an adult is always of grave import. Fränzel goes so far as to abandon all antipyretics, because they all affect the heart in greater or less degree. He advises hot water rather than cold in the relief of pleuritic pain, but gives alcohol regularly from the fifth day on. The true treatment of pneumonia at the present time consists in sustentation of the heart, by alcohol and digitalis, for seven to ten days, or until the disease process has run its course.

DR. N. S. DAVIS thought it a curious fact that the mortality in pneumonia of to-day is undoubtedly greater than that of forty-five years ago. If anything is established,

this very fact has so been by statistics gathered not in the hospitals only but among the population of the United States—city and country, in private and in general practice. As to the question of cold, it has been indubitably demonstrated that the disease prevails more during the winter than during the summer months. He referred to the statements made by a prominent Canadian physician in one of the early meetings of the Association of that Dominion, to the effect that during a practice of thirty years he had adopted three plans of treatment. During the first of the three decades the treatment consisted of bloodletting; the second decade constituted the transmission period from the bloodletting, antiphlogistic treatment to the expectant plan; and the third, the stimulant method. He found, in footing up the records, that the mortality was least during the first decade and greatest during the last. The speaker dwelt at some length upon the benefits derived from bloodletting during the first stage, followed by cardiac depressants during the subsequent twenty-four to thirty-six hours. He cited cases in illustration.

DR. VON KLEIN, of Dayton, Ohio, had, during service in the Russian army, found that pneumonia prevailed to a less extent in a climate in which the temperature averaged 50° below zero, than in our moderate climate. He believed in the judicious use of the lancet. He ascribed the increase in mortality to the fact that the people are not as robust as those of fifty years ago. They have changed as to the surroundings, habits, clothing, etc., and our treatment ought to be guided by the peculiarities of each case.

DR. OCTERLONY, of Louisville, took issue with Dr. Davis in regard to the increased mortality. During the time of bloodletting the mortality was one in five. During the time of mixed treatment, according to the statements of Skoda and Austin Flint, the results improved fifty per cent. J. H. Bennet, of Edinburgh, introduced the method of furthering the natural progress of the disease, with the result that the mortality was reduced to one in thirty-six. He had on former occasions defended the theory that pneumonia depended upon local causes, that the changes were local and that they were amenable to local treatment. But, impelled by more extended observations, he has become a convert to the theory of pneumonia being an essential, specific fever, due to a specific cause, probably the pneumococcus. He thought that a physician was rarely called to a patient during the first stage, but generally when exudation had already commenced.

DR. JENKINS, of Iowa, attributed the apparent increase in mortality to the improved facilities of diagnosis and the advances in our knowledge of pathology.

DR. BAILEY, of Louisville, advocated decidedly the use of stimulants, especially during the last stage.

DR. F. C. SHATTUCK, of Boston, stated that although it is doubtful whether the increased temperature is a salutary and curative process, yet he thought that more attention should be paid to the condition of the pulse than that of the fever. During the past the influence of temperature in pneumonia has been overrated. He had discarded the systematic use of antipyretics in this disease. It is a febrile affection of short duration, and he believed that the use of antipyretics, especially at the approach of the crisis, is dangerous when the heart's action is enfeebled, and this plan of medication may cause dangerous collapse.

DR. VAN BIBBER, in conclusion, stated that he had received a letter from Dr. W. L. Welch, in which the following statement was made: "It is apparent that the evidence is not conclusive that either of the organisms is the infectious agent of croupous pneumonia, certainly no such evidence has been presented as that which leads us to accept the tubercle bacillus, the typhoid bacillus, or the cholera spirillum as the cause of the respective diseases."

DR. MORRIS H. HENRY, of New York, read a paper entitled

CLINICAL EXPERIENCE IN THE ADMINISTRATION OF IODIDE OF POTASSIUM IN THE TREATMENT OF SYPHILIS.

He prefaced his remarks with a few words on the value of mercury in the early, or what is termed the middle period of the evolution of syphilis. In the discussion of the subject proper he stated that the iodide may be administered in doses varying from 5 to 50 grains every four hours; 20 to 200 every twenty-four hours. He spoke of the value of the remedy in syphilitic rheumatism. The remainder of the paper dwelt upon the claims of various authors to the priority of the adoption of the treatment of late and inveterate lesions of syphilis by the administration of large doses of iodide of potassium.

NEWS ITEMS.

The Hygienic Protection of Railway Passengers during the Coming Summer.—Dr. Rauch, Secretary of the Illinois State Board of Health, addresses the following admirable circular, which should apply throughout the country, to the railway managers of Illinois:

The Board directs me to advise you that it is deemed desirable before the advent of warm weather to secure such care of railway stations and grounds and of railway travel, as may tend to improve the sanitary condition and comfort of passengers generally, and specifically to limit the danger of any epidemic contagious disease.

Although there seems to be no immediate cause for alarm as to Asiatic cholera, the germs of that disease still exist in some parts of Europe whence large numbers of immigrants are constantly arriving in this country; and it now prevails as an epidemic in Chili, Brazil, and probably elsewhere in South America. Until it has died out in the countries with which the United States has direct commercial intercourse, it will not be prudent to relax vigilance, nor to omit proper precautions.

We had a narrow escape last fall from the introduction of this disease, and there is no telling what may happen during the summer.

The cleanly condition of water-closets on cars and at stations, also of privies, and the purity of drinking-water supplies for passengers and employes are matters of the first importance in this connection. At many of the small stations the conditions which obtain in these respects are far from satisfactory. Where privies are used they should be kept clean by constant attention. Vaults should be emptied at proper intervals, the contents disposed of so as to prevent further nuisance, and efficient disinfectants should be freely and continually used. Explicit instructions on these points will be furnished by the Board whenever requested.

Interruption of railway travel and traffic may be prevented, and the comfort and welfare of the travelling public will be promoted by good sanitary conditions, and the Board will cheerfully coöperate with you to secure these ends.—*Sanitary News*, April 21, 1888.

The Berlin Exposition of Appliances for the Prevention of Accidents.—Minister Pendleton sends to the State Department from Berlin the translation of a letter which he has received from the Board of Directors of the German Universal Exposition for the Prevention of Accidents. The Exposition, which will be held from April to July, 1889, is to contain apparatus and appliances meant to protect workmen against the dangers which threaten them in the industrial occupations, from the knowledge and introduction of which a reduction in the number of industrial accidents may be expected. It is added that the humanitarian views which prompt this exposition have won the full sympathy and support not only of the principal representatives of industry and agriculture in Germany, but also of the German Imperial and Royal Prussian State officials. The Exposition aims not only to promote a knowledge of the apparatus and appliances calculated to prevent accidents, but also to stimulate an interest in their further development and to furnish the inventors of similar protective contrivances an opportunity to demonstrate their practical utility. The Exposition will, therefore, have much of the character of an industrial exposition, differing only from the purely industrial expositions in that such articles only will be admitted whose whole aim or make has a demonstrable relation to the prevention of accidents. Such articles and appliances shall also be admitted which tend to the workmen's protection and general welfare, and are, therefore, adapted to lead indirectly to a diminution of industrial accidents.

As the workmen and handicraftsmen of all lands have an equal concern in the decrease of accidents in the industrial occupations, there can be no doubt that this Exposition will also be of interest for other countries, especially as foreigners are allowed to enter exhibits. The Board of Directors respectfully beg Mr. Pendleton to make this projected undertaking known, in the manner that may seem most fit, among those whom it may concern, but especially among the makers and inventors of safety apparatus in the States whose government he represents.—*Sanitary News*, April 21, 1888.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT U. S. ARMY, FROM MAY 8 TO MAY 14, 1888.

McKEE, JAMES, *Lieutenant-Colonel and Surgeon*.—Granted leave of absence for one month.—S. O. 107, A. G. O., May 9, 1888.

GREENLEAF, CHARLES R., *Major and Surgeon*.—Detailed as a member of a Board of Medical Officers, to assemble at the U. S. Military Academy, West Point, N. Y., on June 1, 1888, to examine into the physical qualifications of members of the graduating class, and of the candidates for admission to the Academy.—S. O. 104, A. G. O., May 5, 1888.

O'REILLY, ROBERT M., *Major and Surgeon*.—Detailed as a member of a Board of Medical Officers, to assemble at the U. S. Military Academy, West Point, N. Y., on June 1, 1888, to examine into the physical qualifications of members of the graduating class, and of the candidates for admission to the Academy.—S. O. 104, A. G. O., May 5, 1888.

SKINNER, JOHN O., *Captain and Assistant Surgeon*.—Detailed as a member of a Board of Medical Officers, to assemble at the U. S. Military Academy, West Point, N. Y., on June 1, 1888, to examine into the physical qualifications of members of the graduating class, and of the candidates for admission to the Academy.—S. O. 104, A. G. O., May 5, 1888.

Par. 11, S. O. 104, A. G. O., May 5, is amended by par. 4, S. O. 108, A. G. O., May 10, 1888: CHARLES R. GREENLEAF, *Major and Surgeon*, ROBERT M. O'REILLY, *Major and Surgeon*, and JOHN O. SKINNER, *Captain and Assistant Surgeon*, are detailed as a Board of Medical Officers, to assemble at the U. S. Military Academy, West Point, N. Y., on June 1, 1888, to examine into the physical qualifications of the candidates for admission to the Academy, and, in connection with the Superintendent of the Academy and Commandant of Cadets, of the members of the graduating class.

BROWN, HARVEY C., *Major and Surgeon*.—The leave of absence for seven days, granted by Orders No. 68, Fort Barrancas, Florida, May 2, 1888, is extended twelve days.—S. O. 90, *Division of the Atlantic*, May 8, 1888.

LORING, LEONARD Y., *Captain and Assistant Surgeon*.—Granted leave of absence for three months, on surgeon's certificate of disability.—S. O. 105, A. G. O., May 7, 1888.

BROWN, PAUL R., *Captain and Assistant Surgeon*.—Granted leave of absence for six months, on surgeon's certificate of disability, with permission to leave the Division of the Atlantic.—S. O. 107, A. G. O., May 9, 1888.

BENHAM, ROBERT B., *Captain and Assistant Surgeon*.—To proceed from Fort DuChesne to Fort Douglas, Utah, and report to the commanding officer of that post, not later than the 26th inst., to accompany the battalion of the Sixth Infantry to Fort Lewis, Colorado. Upon completion of this duty, he will return to his station, Fort DuChesne, Utah.—S. O. 33, *Department of the Platte*, May 5, 1888.

APPEL, D. M., *Captain and Assistant Surgeon*.—Will be relieved from duty at Fort Davis, upon the arrival of Captain and Assistant Surgeon J. V. Lauderdale, and proceed to Fort Hancock, and report to the commanding officer of that post for duty.—S. O. 49, *Department of Texas*, May 5, 1888.

EDIE, GUY L., *First Lieutenant and Assistant Surgeon*.—Will proceed, not later than the 25th inst., to Fort Concho, and report to the commanding officer of the Eighth Cavalry for duty as Medical Officer, in compliance with par. 13, S. O. 99, c. 3, Headquarters of the Army.—S. O. 49, *Department of Texas*, May 5, 1888.

CLENDENIN, PAUL, *First Lieutenant and Assistant Surgeon*.—Will be relieved from duty at Fort McIntosh, and proceed with the battalion of the Sixteenth Infantry from that post to San Antonio; from the latter point he will accompany the companies of the Sixteenth Infantry to their destination.—S. O. 49, *Department of Texas*, May 5, 1888.

WALKER, F. V., *First Lieutenant and Assistant Surgeon*.—Will be relieved from duty at Fort Ringgold, and proceed with Company "D," Sixteenth Infantry, to San Antonio; he will then report for duty to the commanding officer of the Post of San Antonio.—S. O. 49, *Department of Texas*, May 5, 1888.

HARRIS, H. S. T., *First Lieutenant and Assistant Surgeon*.—Will be relieved from duty at Camp Pena, Colorado, and proceed to Fort Davis, where, upon arrival, he will report to the commanding officer of the Eighth Cavalry for duty as Medical Officer with that regiment on its march to the Department of Dakota.—S. O. 49, *Department of Texas*, May 5, 1888.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY, FOR THE WEEK ENDING MAY 12, 1888.

CABELL, A. G., *Passed Assistant Surgeon*.—Detached from the U. S. Steamer "Adams," to proceed home, and wait orders.

SIMONS, M. H., *Surgeon*.—Detached from the Naval Academy, and ordered to the Practice Ship "Constellation."

HORWITZ, P. J., *Medical Director*.—Granted leave of absence for six months, with permission to leave the United States.

A Naval Medical Examining Board is now in session at the Naval Hospital, Philadelphia, for the examination of candidates for admission to the Medical Corps of the Navy. There are eleven vacancies in the list of Assistant Surgeons. Permits for examination can be obtained on application to the Secretary of the Navy.